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'Business Club' Evaluates Implementation of Leasing

18200465 Moscow EKONOMICHESKAYA GAZETA in Russian No 38, Sep 89 pp 10-11

[Roundtable discussion by Members of the "Business Club": "'Leasing' Is a Sweet Word"]

[Text] For several years now we have been asserting that the working man is the master of production. Nevertheless, the master, who—according to V. Dal's exemplary expression—will walk around the yard to find a ruble, has ceased to notice tens and even hundreds of millions of "thrown-away" rubles literally under his feet.

Perestroyka, the radical economic reform which has been unleashed in this country, has compelled us to look this truth in the face and to create the kind of mechanism whereby the sense of being a master would return to human beings.

And, as practical experience has shown, this mechanism will not work at full capacity without leasing. But just what is it which is hampering the emergence of leasing? Why is it that various obstacles have begun to appear here and there on the path of leasing? How should the efficient work of leasing collectives be adjusted? Expressing various thoughts on this problem were the participants in a discussion held by EKONOMICHESKAYA GAZETA'S "Business Club." It was sponsored by this newspaper's editors, as well as by the Ukrainian CP Donetsk Obkom and the Industrial Economics Institute of the USSR Academy of Sciences.

We're Tired of Being Parasites

[Ye. Yukhno, secretary, Ukrainian CP Donetsk Obkom] Eight enterprises within the Donetsk Oblast's industry have converted to leasing. So far they produce scarcely half of the total volume of output being sold by this oblast.

But this is only for the time being! Leasing relations are gathering more and more force and are attracting the attention of an ever-increasing number of labor collectives. Therefore, it is extremely important now that we determine the sore points of the present-day leasing practice, and that we find an effective means for solving the urgent poblems of the leasing movement.

[L. Grebenchenko, director, Gorlovskiy Furniture Plant] Why did you convert to leasing? Many persons ask us this question. We have stepped over the second model of cost accounting, having seen in leasing more independence in forming a portfolio of orders, utilizing earned funds, and establishing a reliable structure of administration. In short, leasing reveals most fully the potentials of the collective and its reserves.

We began by developing a standard for the enterprise, specifying the quality of work to be done by those who carry it out. We tied this in with a system for awarding bonuses to the supervisors and specialists. But the main thing is that we worked out a statute on intra-enterprise cost accounting under leasing. It noticeably expanded the rights of the structural sub-divisions. We calculated the norms for forming the funds for them and ascertained the coefficient of the labor contribution, having also included in its orbit the staff members of the plant administrations. For the "ITR's" we established "floating" wages instead of firm ones. We are setting relations between the administration and the production sectors on a contractual basis.

[V. Dyachenko, director of the Armlit Khartsyzskiy Plant] We've been on the leasing system since last year. If other ministries are still putting up quite a few obstacles in this matter, here it is specifically the Soyuzelektrosetizolyatsiya Association which showed initiative in converting all its own enterprises to leasing.

Our hands were untied, and the enterprise started up the mountain. This does not mean at all that everything here is proceeding smoothly with the higher-ranking superstructure. For example, we would like to allocate to the enterprise development fund not 50 percent of the income but more. However, that's not the way it came about here....

Moreover, some plant ambitions are still manifesting themselves in this regard. On one occasion some workers from one of the shops came to me and said something like the following: We're now on a leasing system and, therefore, want to receive more money. I asked them: Well, now, have you sharply increased your productivity and economized on materials? No, they replied, we're still working just like we used to. I had to explain to them that leasing is not some kind of manna from heaven. And what I heard in reply was: that kind of cost accounting does not suit us. All right, I said, then please work according to the old system. And what do you think happened? They did not turn down the leasing contract, after all. And all because, despite the difficulties involved, the work became more interesting to do. And ultimately the wages also increased.

We increased the amount of profits by a factor of 1.6. And not by means of ratcheting up the prices. But, in the first place, by means of increasing the labor productivity (by 25 percent), and, in the second place, by means of reducing material outlays (by 60 percent).

[L. Kurtova, chief economist, Donetsk Worsted-Spinning Factory] In 1985 our enterprise was switched to a planned-loss category. The factory's debts amounted to 5 million rubles. But, you know, we got tired of being a parasite on the state, and, therefore, we were one of the first in this oblast to switch over to leasing. Within a year we had paid off all our debts, even though our outout's profitability was only 5-7 percent.

What were the initial steps toward leasing?

We split up all funds relating to the structural sub-divisions and put them at the disposal of the shops. Now they are at the disposition of the councils of labor collectives. Because, after all, they know best who is working and how, what kind of labor and intellectual contribution each person is making to the general money-box. This enhanced the authority of the STK's [councils of labor collectives]; people on the job came to feel themselves to be, indeed, the masters of the factory. Now they themselves are keeping track of observing the technology, labor discipline, as well as economizing on material and energy resources. The workers' initiative has been aroused. Working people are even beginning to suggest that superfluous jobs and administrators be cut back. In short, they are learning how to count expenditures.

Nor have engineering and technical personnel remained by the side of the leasing "road." Of course, it is still no simple matter to coordinate their work with the final result. One of the basic criteria for evaluating management personnel we consider to be initiative. The "initiative index" of the engineering and technical personnel is determined at the factory by a central cost-accounting commission. Depending upon the size of this indicator is whether a specialist will receive a 15-percent, 50-percent, or 75-percent bonus added to his wages. But if not one of the criteria for evaluating an ITR is fulfilled, then he receives only 50 percent of his wage scale.

There has also been a change in the reciprocal relations between the structural sub-divisions which have transformed their production. The sale of output from one technical section to another is carried out by means of checks. A unique, intra-production money has been introduced. With its help, the quality and quantity of the work is calculated, along with the assortment of the items and the timeliness of the deliveries. Here you cannot palm off some kind of "fraud" on the person next to you; otherwise he will fine you and, in the final analysis, leave you without wages. The check system of accounts has allowed us to avoid the notorious leveling. The wage fund of this or that collective now depends upon the number of checks rather than on the gross volume of output.

[A. Ryazanov, section chief, Yuzhnodonbasskaya Mine No 1] Leasing at a mine is not such a simple matter, the specifics tell us. Nevertheless, we were not afraid of embarking upon a new course. We argued for a long time, and at last we decided as follows: the consolidated, mining, multi-skill brigade could become a leaseholder. It included virtually the entire collective of the section. It has worked off the reserve supplies of coal and made amortization contributions for machines and equipment. By way of economizing we have undertaken to remove the metal props, the timbers, and other wooden materials which have become unnecessary in spaces that have been worked out. And we will turn all this over to the mine in return for a specific payment for repeated use. The administration, in turn, provides the leaseholders with the necessary equipment, guarantees the trouble-free operation of the transport as well as the ventilation of the mine excavations.

After selling the coal to the mine at the current prices and making the above-listed payments, the leaseholders leave the rest for themselves. It is this which detemines our earnings. It is distributed in accordance with the labor contribution made by each person. Thus we have eliminated leveling. The section's conversion to leasing has permitted us to raise wages by a factor of 1.5-2.

A Renovation with Many Unknown Factors

[Ye. Yukhno] Until quite recently leasing relations were unlawful. In April of this year, an Ukase of the USSR Supreme Soviet Presidium was adopted, entitled "On Leasing and Leasing Relations." And today the word "leasing" is constantly on the lips of managers, scientists, specialists, and party officials. But is everything going smoothly here? Why does leasing exist at certain enterprises in a kind of truncated form? The answers to these and other questions must be found as soon as possible. Otherwise, matters will not proceed forward.

[V. Dyachenko] Let me repeat again that it would be unjust to complain against the association. But so far the issue of leasing payments remains unclear for the plant. The fact of the matter is that during the initial period we were freed from paying for the basic funds. Nowadays we are working well, but what lies ahead for us? About this there is silence. You will agree that it is difficult to arrange one's work under such conditions.

[L. Grebenchenko] During the conversion period our plant encountered an entire "bouquet" of problems. The first was red tape in coordinating our calculations. We produced them by proceeding from the actual possibilities, but an attempt was made to impose bureaucratic, ministerial types of factors on us. Quite a few "clarifications" run counter to the leasing contract.

The ministry was opposed to leasing and, at the same time, did not want to let the reins out of its own hands.... We request to lease the plant for 12 years. The order arrived, and there was the number "7." This will not do at all, inasmuch as we need 7 years merely to renovate the building. We made calculations and found ways how and by what means to earn the money so that, after the plant was renewed, we could increase the volume, improve the quality, and expand the product assortment. But, in connection with such actions by the ministry, we've simply lost confidence in tomorrow.

Secondly—and no less importantly—is the lack of practical experience and methodological recommendations.

Our thanks to EKONOMICHESKAYA GAZETA. It has helped us greatly in our work. Especially in letting us know about advanced experience. We traveled to the Brutovskiy Construction Materials Combine and visited the association of the well-known ophthalmologist, S. Fedorov. Nevertheless, there is still a great deal that is unclear about leasing.

Face to Face with Human Beings

[Ye. Yukhno] The All-Union Center for the Study of Public Opinion under the jurisdiction of the AUCCTU and USSR Goskomtrud [State Committee for Labor and Social Problems] conducted a poll of 900 staff members at 19 enterprises in Moscow Oblast. It was revealed that people link the conversion to leasing primarily with the possibility of increasing their wages. And those persons polled placed expectation of changes in the social sphere in second place.

[S. Korniyenko, fitter-adjuster, STK chairman at the Gorlovskiy Furniture Plant] At our plant the attitude toward leasing is a most positive one. With the conversion to cost-accounting relations, we certainly began to solve many social problems. For example, we constructed a plant cafeteria and outfitted it with excellent equipment. We now eat using the enterprise's funds, and the plant pays for our rides on the municipal transport. Family members of our employees now obtain passes to rest homes and sanatoriums at a 50-percent discount. The Council of the Labor Collective, in conjunction with the trade-union committee, has adopted the following decision: those staff members who are retiring on a pension are to receive an emolument amounting to an average month's wages from the social development fund.

Everyone understands very well that we ourselves have earned the funds for these and other needs, and that we ourselves have distributed them. And, this you'll agree, has a pleasant effect on the soul of a working person; it gives him an incentive to work still better.

[V. Galik, partkom secretary, Slavyansk Armature-Insulation Plant] During the conversion to leasing we too were confronted with the following question: what will the collective receive? This was likewise important for us because, in certain production divisions, the plant had as much as 23 percent of production losses. The enterprise has a low rate of profit. Neither the first nor the second model were able to produce the desired effect. Say, for example, that we had to find 600,000 rubles for housing construction. Where were we to get them if only 200,000 rubles were released for us? Should we try a "long-term construction project"? Then we adopted the following decision—to convert to leasing.

Now the plant, by the efforts of the MZhK [Youth Housing Complex] has inaugurated a project for constructing a 200-apartment building with an improved floor plan. In order to fill up the plant's money-box, the sphere of paid services to the population was expanded, as was also the production of consumer goods. In sum, the matter moved off of dead center.

Leasing has likewise compelled us to restructure our political-educational work. Formerly, it was assumed that it was sufficient to "feed" one's audience with the system of party-political doctrine by means of quotations from the periodical press. Teaching about economics remained in the shadows. Nowadays we have turned our faces to specific economics; we have organized objective economic education at all levels of party, Komsomol, and trade-union education. We are teaching people to "translate" the knowledge received into the language of practical deeds in the brigade, shop, and at the plant; now the workers themselves are coming to the partkom with suggestions for organizing studies.

[L. Kudryavtseva, partkom secretary, Donetsk Worsted-Spinning Factory] Nowadays it is easy for the partkom to work because people are permeated with responsibility for the state of affairs at the factory. If earlier the council of the labor collective was elected according to the principle of "anybody but me," nowadays they think that one or another council member will represent the collective and balance man's activities. I may say, without boasting that the communists were the first to support the factory's conversion to leasing.

A March of Dilettantes?

[I. Butin, director, Mariupol Azovzhelezobeton Production Association] I'd like to touch upon one fundamental question. Leasing, as you understand, involves primarily issues of transforming property ownership. And here, without sufficiently precise, scientific grounds, you cannot avoid recommendations and suggestions. Introducing leasing without the help of science is the same as looking for an exit in the dark. Unfortunately, that is precisely what is happening. Because at times we are not finding the answers to elementary questions.

Is the higher-ranking organization the de jure owner of an enterprise's fixed assets? How should the interrelations between the bank and the leaseholder be set up? And, you know, matters sometimes get to the point of the absurd. We've been leasing since January of this year, but the UkSSR Ministry of Construction continues to dictate to us its own "rules of the game," funds, and limits. Why, then, have a leasing contract?!

[Ye. Yukhno] A great deal is now being said and written about leasing. But so far there has not really been any clear and precise presentation of the leasing forms for selling socialist property. In one case, the scholars assert that property relations do not change under leasing. In another case, they say—and these are in the majority—that the leaseholder is actually a genuine property owner.

[I. Zamoyskiy, sector chief, Institute of Industrial Economics, UkSSR Academy of Sciences, doctor of economic sciences] The matter here is not merely about science, but also about economic legislation. In our country, legislative and legally binding acts frequently do not square with each other.

At the same time many laws of all kinds are being "baked" here which have no connection at all with reality. And so it turns out that their fruits are essentially illegal.

Prior to the adoption of amendments at the session of the USSR Supreme Soviet, leasing was not included in

writing in any way in the Law on State Enterprises. But even now contradictions still remain. All this must be taken into account when working out the Law on Leasing.

[B. Finkov, director, Krinichanskiy Mechanical-Repair Plant] Our collective did not encounter any obstacles from the ministry when we converted to leasing. Although there was no particular delight, nor was there any particular help. Nor did we have any sorts of recommendations from science. We've had to find our own way in everything, to operate by the method of trial and error, and to tamp down the bumps. One gets the impression that if we manage to pull through this successfully, then a scientific grounding will be put under our experience. That's the way it was during the period of stagnation, and it continues to be so tody. But, of course, science should go on ahead!

[K. Khubiyev, candidate of economic sciences, MGU [Moscow State University] imeni M.V. Lomonosov] Our session is yet another convincing proof that leasing is a complicated, economic-management phenomenon which requires careful study and the preparation of enterprises for the new forms of economic management. Undue haste, "campaigning," and euphoria can only do harm to leasing.

Quite often nowadays leasing is the term used to designate elements of internal cost accounting, a collective contract, or the expansion of the framework of enterprises' economic independence. It is often the case that leasing is property rental, and that it can be carried out under various forms of production organization.

The essence of leasing as relations of property rental assumes decisive importance when we are talking about the relations of leasing enterprises and associations with higher-ranking organizations.

Mention was correctly made about the lack of justification for concluding a contract for leasing enterprises with higher-ranking administrative organs, transforming the latter into lease grantors. The rationale for this act was considered merely the fact that the framework of the enterprises' indedendence was expanded. But it remains an open question as to whether leasing is a mandatory condition of this independence.

V. Dyachenko, the director of the Armlit Plant has informed us that their enterprise converted to leasing, but it was released from paying for the funds. However, payment was established for the labor resources. Wherein, then, lies the essence of leasing if there is no rental or producer goods nor any payment for them? Or, perhaps, the payment for the labor resources attests to the leasing of the latter?

In speaking about leasing as a means of expanding enterprises' economic independence, we must also take into account another extreme whereby independence cannot be transformed into arbitrary power. Under the cover of leasing certain supervisory officials have achieved the conversion of state enterprises into the de facto status of cooperatives. The supervisory officials of these enterprises are attracted, above all, by the freedom of price formation. Under the conditions of the monopolism of the producers and the shortages of their products, such a "freedom" would lead to an uncontrollable rise in prices. Moreover, this process would have the "effect" of a chain reaction. In the case at hand, a patent individuation of the group interest would occur, its transformation into a group egoism, and contradictions of the nationwide interest. Should we proceed to such an expansion of independence under the cover of leasing? Hardly!

The following general conclusion can be drawn: leasing has made its first, insufficiently confident and not always correct steps in industry. We must not be in too much of a hurry to push this process. It needs to be very carefully studied. But, as someone correctly noted, so far economic science has lagged behind practical experience. And we must mobilize the efforts of scientists so that this lag may be overcome as rapidly as possible.

According to Data of the USSR Goskomstat [State Committe for Statistics]

The mass conversion of enterprises to leasing contracts began at the end of 1988. By the middle of the current year the new modus operandi had already been adopted by 903 industrial enterprises, 449 construction organizations, 434 retail-trade enterprises, 139 public-dining enterprises, and 98 enterprises providing day-to-day services to the population.

Industrial enterprises which have been fully converted to leasing contracts during the first six months of 1989 produced 1.6 percent of the total volume of output [GNP] (goods and services). Leasing relations developed at an outstripping pace at enterprises in the construction materials industry and the machine-building complex. The share of the production volume generated by leased enterprises amounts to 3.9 percent of the production volume in the USSR Ministry of the Construction Materials Industry and 2.7 percent of the machine-building complex.

Proportion of Output Volume (Work, Services), Produced During the First Six Months of 1989 in Associations and at Industrial Enterprises, Operating Under the Conditions of Cost Accounting, Based on the Normative Distribution of Income and a Leasing Contract Within the Total Volume of Output (Work, Services), As Characterized by the Following Data (in percent)

	Total	Proportion of enterprises operating under the following conditions:	
		Cost accounting, based on normative distribution of income	Leasing contract
Industry as a whole	100	7.9	1.6
including:			
Fuel-and-energy complex	100	2.8	0.5
Metallurgical complex	100	26.4	1.3
Machine-building complex	100	8.1	2.7
Chemical and lumbering complex	100	7.8	1.6
Agro-industrial complex	100	3.7	1.7
Social complex (Union republic ministries of light industry)	100	14.4	1.7
Construction complex (USSR Ministry of the Construction Materials Industry	100	1.9	3.9

Certain Indicators Characterizing the Work of Industrial Enterprises Operating Under the Conditions of Cost Accounting, Based on the Normative Distribution of Income, and Leasing During the First Six Months of 1989 (in percent)

	For industry as a whole	For enterprises operating under the following conditions:	
		Cost accounting, based on the normative distribution of income	Leasing contract
Fulfillment of contractual obligations regarding product deliveries	99.3	99.7	99.6
Proportion of enterprises which did not fulfill their contract obligations	14.0	6.0	11.0
Growth rate of volume output (work, services)	102.7	103.6	105.8
Fulfillment of state orders for non-producer type consumer goods	104	106	107
Reduction of expenditures per ruble of output (work, services)	0.09	0.3	2.56

EKONOMICHESKAYA GAZETA Afterword

There are still quite a few obstacles on the road to leasing. Now and then it "stumbles" on the administrative-bureaucratic mounds of various kinds of departmental instructions. This was mentioned with alarm by the people's deputies at their Congress, and the first session of the USSR Supreme Soviet. The many shortcomings of the Ukase on Leasing now in effect were noted. But the main thing was the adoption of a decision to introduce the Draft Law on Leasing and Leasing Relations in the USSR for consideration at the autumn session of the USSR Supreme Soviet.

In the opinion of most of the deputies, the Law will allow leaseholders to break away from the entanglements of the departments and will provide for genuine cost-accounting relations. And it is gratifying that the initial steps along the path to this have already been taken.

In its issue No 36, EKONOMICHESKAYA GAZETA has already published the initial draft of the Law on Leasing. In our opinion, the discussion of this draft will allow us to work out and adopt the kind of Law which will fully meet the requirements of the radical economic reform and the proceses of the socioeconomic changes in our country.

The session of the EKONOMICHESKAYA GAZETA "Business Club" was conducted by N. Tarasenko.

This report was prepared by I. Donchenko and N. Turkin.

Ideas of Economist Nemchinov Re-Examined 18200473

[Editorial Report] Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian on 26 September 1989 publishes on page 4 a 3,800-word article by Lyudmila Telen entitled "To Survive and To Live." The article examines the career and ideas of the Soviet statistican and economist Vasiliy Nemchinov (1894-1964).

Telen credits Nemchinov for introducing new concepts into socialist economic theory. She attributes the introduction of the principles of cost-accountable planning, credit levers, and profitability to him. Telen writes, "The gap between Nemchinov's views and official doctrine was colossal." Whereas official economists praised the efficiency of centralized planning, Nemchinov wrote that centralized planning should not be introduced to such a degree that it destroyed local initiative. He wrote, "The enterprise should have the right to reject disadvantageous orders issued from above." Far from criticizing "bourgeois" profit motives, Nemchinov wrote, "Profitability should be the basic criterion for determining the success of economic activity." Furthermore, he argued that a "sufficient" share of an enterprise's profit should be left to its own dispersal, an idea which other Soviet economists such as Strumilin felt was a "significant deviation from socialism and a turn toward syndicalism." Telen writes that Strumilin feared that Nemchinov's ideas carried a "hidden threat" to centralized planning, and she notes that these are the same arguments raised today in opposition to leasing, decentralization and enterprise profitability.

In her summary of Nemchinov's contribution to economic thought, Telen writes, "Nemchinov didn't create a scientific revolution. He wasn't the founder of domestic genetics; he only helped it survive difficult years. He didn't invent domestic econometrics; he only developed its ideas. He didn't discover cost accounting; he only turned it into an orderly system. He left behind scientific works in various areas of knowledge.... He left ideas which a quarter century later are still a part of economic life."

Telen describes the beginning of Nemchinov's career as an agricultural statistican. By age 32 he had become head of the agricultural statistics department under the Central Statistical Administration. It was in this position that he was assigned to draw up a report for Stalin on the production of commodity grains. Nemchinov's data indicated that both rich and mid-level peasants were reducing their grain sales to the state. According to Telen, Stalin later used this evidence to justify forced collectivization. Telen also cites another instance where Stalin "used Nemchinov's expertise in his own interests." Nemchinov had publicly declared the 1937 census "methodologically illiterate," giving Stalin the necessary pretext to annul and suppress its findings, which Telen contends would have shown the "sharp drop in population growth caused by repressions and famine."

During the 1930's Nemchinov became director of the Timiryazev Academy for agricultural research. Telen writes that from the very start, Nemchinev allied himself with other scientists who believed that the claims made by the Soviet geneticist Lysenko, president of the All-Union Academy of Agricultural Sciences [VASKhNiL], were "antiscientific rubbish." The rivalry between the Lysenko and Nemchinov institutes culminated in the August 1948 VASKhNiL session. Nemchinov denounced the line of research carried out by Lysenko and his followers at VASKhNiL and boldly stated: "I bear moral and political resonsibility for the research carried out by the Timiryazev Academy.... I consider it the correct line and will continue to conduct my research." Immediately following this statement, he was removed from his position as director. According to Telen, he continued to give lectures, but out of fear for the future of his students retired shortly afterward.

In the next stage of his career, Nemchinov headed the Laboratory for Economic and Mathematical Methods [LEMM]. Telen describes this period as a time of creative and cooperative work between Nemchinov and his students. The author writes that it was during this period that Nemchinov resolved to establish a domestic school of mathematical economics, despite derision from officially recognized economists who called Nemchinov and his followers "mathematical abstractionists" dedicated to "homebrewed econometrics." While at LEMM, Nemchinov began studying questions of intersectoral balances, econometric modeling, and price formation. According to Telen, the Central Economic-Mathematics Institute, which was founded in 1963 upon Nemchinov's recommendation, grew out of the circle of scholars who surrounded Nemchinov at LEMM.

INVESTMENT, PRICES, BUDGET, FINANCE

Tax Breaks, New Laws Needed to Support Commercial Banks

18200452a Moscow IZVESTIYA in Russian 31 Aug 89 Morning Edition p 2

[Article by G. Letunov, deputy chairman of the board of directors of Avtobank [Bank for the Development of the Automobile Industry of the USSR] and V. Fedinin, doctor of economics, professor: "Reform of the Economy Is the Foundation of Restructuring: Avtobank and Commerce"]

[Text] Lately there has been a great deal of talk about the reform of the banking business, about seeing to it that the banks become an active factor in the struggle to increase production efficiency. The ice has begun to break. The transformations began with the creation of six state specialized banks. Then joint stock commercial banks appeared. Today there already more than 100 of them, including the Bank for the Development of the Automobile Industry of the USSR. It is called upon to promote the expansion of the output and the improvement of the exploitation of automobile and agricultural technology, the increase of the production of consumer goods, and the development of services connected with automobile service. To begin activity, the founders of the bank have raised its share capital in the amount of 250 million rubles and have paid it almost in full. In the future everything will depend on enterprise and the skillful activity of the directors of the bank, its council and board.

It must be said that the creation of commercial banks is of fundamental significance. First of all, the state monopoly in the execution of banking operations has ceased to be a fact. Secondly, their activity signifies the introduction of khozraschet principles into the banking system and leads to the expansion of competition in the banking business. When there was one "common stock" in the form of Gosbank, from which they drew countless funds, it was difficult to see who is who. Now the situation is changing.

Unfortunately, the appearance of a network of specialized banks has not freed the entire system of its chief shortcoming—the pressure of administrative levers instead of genuinely economic ones. It is difficult to imagine for anyone to value blessings obtained as a gift. But until today, cheap credit is practically a gift, especially for capital investments. The appearance of a real economic paradox was produced by the situation where for credit—taken for 3-5 years and more—the state organizations and enterprises paid from 0.5 to 2 percent annual interest with a level of inflation (according to the most modest estimates) of 5-6 percent a year. In other words, the state loans money with a loss for itself. Such charity one can allow oneself in some narrow sphere of social development. In the other cases, it lacks common sense, since it corrupts the managers and does not induce them to invest the borrowed funds in the most efficient spheres. We will add to this that even now the specialized banks that are in operation are bound hand and foot by numerous instructions, regulations and circulars, depriving them of interest in the search for credit resources.

The idea is that the activity of shareholder banks must be organized completely differently. The commercial status offers them significant independence in the determination of partners, goals, and terms for which credits are granted, as well as the magnitude of interest rates. They operate on conditions of full khozraschet and self-financing, their own prosperity depends entirely on the enterprise, competence and initiative of their employees.

The commercial banks do not receive credit resources from the state treasury, but they raise them through the attraction (purchase) of spare funds of enterprises, organizations, cooperatives, and the personal accumulations of citizens. They raise their own funds through profit from banking operations. The enterprises and organizations which transfer their temporarily free funds to the bank also gain a considerable advantage—a few percent annual interest, depending on the term of investment.

The interest policy of the commercial banks is determined by the average interest rate for credit resources. They must "sell" money at a somewhat higher price than they are paying their customers when they "buy" deposits. The difference in price between the purchase and sale of credit resources, as the bankers say, guarantees the covering of expenses for the maintenance of the banks, their development, payments into the budget, dividend payments on the shares, and the formation of economic incentive funds.

The first steps of the activity of the commercial banks give hope for success. In half a year, the Bank for the Development of the Automobile Industry of the USSR succeeded in accumulating approximately a billion rubles from funds lying without movement in enterprises, organizations, cooperatives and private individuals. The number of clients is growing, more and more people are coming to an understanding of the advantage of cooperation with the bank. Here crediting has already been developed, as well as clearing service for dozens of enterprises of the automobile industry and other sectors, cooperatives engaged in automobile service and the production of spare parts. The search for new sources of credit resources is expanding, business relations are being established with other banks, enterprises and organizations of related sectors, and the question of the issue of shares for the population is being examined.

The activity of the commercial banks, apparently, raises the question of the formation of a special exchange fund for loan funds, where these banks on the basis of demand and supply could buy and sell credit resources. But this is a matter for the future. Today, in proportion to the development of the commercial banks, we also see an increase in the problems connected with their normal vital activity. To begin with the fact that they are from the outset put into unequal conditions with the institutions of the state banking system. The specialized state banks receive credit resources guaranteed and for moderate payment; the commercial banks, as we said above, obtain them for a solid payment, they do not enjoy any favors and priorities. In essence, this is how it should be under full khozraschet. But for all! And as long as this is not the case, as long as the approaches are so different, an extremely sharp dissonance is felt in the situation of the commercial and the non-commercial credit institutions. It seems that the transfer of the state banks to the principles of full khozraschet has been dragged out to the extreme. There have been many declarations, but there is no real deed. Meanwhile, only khozraschet which permeates the entire system from top to bottom will make it possible to properly raise the influence of the state banks on the efficiency of production. In so doing, certain protectionist approaches are not at all excluded. By establishing the norms for the sale of centralized credit resources at a relatively low price, the state can stimulate one sector or another, one region or another. This, on the one hand, unties the hands of the banks, on the other—it will give the state the possibility of actively influencing the economy through a flexible banking mechanism. But even in so doing, if the entire network of banks will put khozraschet at the basis of its activity, if the situation of the various systems is equalized, then healthy competition will be able to appear, without which not a single market is conceivable. In present-day conditions, some are trading in money, and others simply make presents of it, some must earn money, and on others it falls like

manna from heaven. In such a situation, the whole bank system cannot yield the proper return.

There are other problems here. In building its relations with the shareholders, the state cannot take into account their specific character. It is manifested, above all, in the fact that their management is carried out by the general meeting of shareholders, who decide all questions connected with the distribution of financial resources, profit, the covering of losses, determine the number of employees, the wage fund, proceeding from the possibilities of the bank. The full right of the council and the board of directors of the bank to have free disposition over their money resources is a completely mandatory condition of the normal functioning of a commercial bank. Without such independence, one can simply cross out the sign "commercial"; what kind of commerce is here if they lead the entrepreneur on a string. Meanwhile it is precisely in this manner, according to the old habit, that some departments are trying to do things.

Not long ago, for example, a circular of the USSR State Committee for Labor and Social Problems and the AUCCTU came out, prescribing the commercial banks to pay their employees wages on the level of the salaries of the republic offices of Gosbank. If we have to go over to such a system of wages, the whole idea of the development of enterprise, initiative, and banking sharpness will come tumbling down.

This circular is unlawful, but it was adopted, and, as they say, you cannot chop wood with a penknife. Who needs this? you ask. We are convinced that the decision was taken under pressure from the directors of the state banks. The following talk is making the rounds, they say: The best people are leaving us for the commercial banks, where they can earn more. And this is what they are trying to prevent in such an incorrect way.

This is how tenacious the departmental itch is: Instead of energetically introducing khozraschet and self-financing, creating conditions for the development of enterprise and initiative and, on this basis—for the increase of wages for work in its system, instead of all this, they take into their hands the old administrative cudgel and thrash the competitor on the head with it. So that no one thrusts himself forward, so that all would be equal and all would be in an equally bad way.

Incidentally, about the laws. Here, too, not everything is well by any means. Some of them have become hopelessly obsolete, they were adopted long ago, without regard to the present situation. Others are being prepared in the old style, and what is more under departmental pressure, without consultation with specialists who are working directly in commercial banks. As a result, instead of the defense of the interests of society, only the interests of the departments are reflected.

Especially this concerns the procedure for tax imposition. Today the payments of the commercial banks are determined on the same level as the specialized banks. The pay equally, but their situation is far from equal. First of all, the specialized banks receive credit resources, merely extending their hand to the treasury and at a a paltry price, while commercial banks must work hard to search for these resources and pay a pretty price for them; secondly, their colleagues from the state sector do not have to pay out dividends on the shares; thirdly, the state banks have long ago developed a network of clients, who in essence are monopolistically attached to them, there is no getting away from them, but the commercial banks still have to earn authority among the clients—which is by no means a simple thing. Moreover, the state receives advantages from them not only in the form of direct taxes. You see, even the dividends have a tax imposed upon them.

We are convinced that progressive taxation, if they really want to direct it toward the strengthening of the system of khozraschet banks, must take all of this into account. As well as the fact that the banks that have hardly come into existence need time for a running start, in particular in order to raise a reserve of funds, insurance and risk funds, which make it possible to be not only mobile, but also profitable in their work. The practice of the Bank for the Development of the Automobile Industry of the USSR shows that, in the best of cases, 2-3 years are needed to reach full capacity. This term, evidently, must be secured with favorable, sparing taxation in order to let the infants stand on their feet.

Today such conditions do not exist. And if a law on taxation will be adopted, according to which the commercial banks, already beginning this year, must give up half of their profit, this will cut back their possibilities and initiative for many years to come. An important and promising undertaking may fade away, not having had the time to flourish.

The new banks can become a really powerful force capable of moving the economy forward. But for this, they need the support and assistance of the state. It is necessary to create an atmosphere of confidence in their stability and the unconditional realization of their possibilities.

Gosbank Chairman on Bank's Role, Responsibilities

18200452b Moscow PRAVITELSTVENNYY VESTNIK in Russian No 17, Aug 89 p 5

[Interview with Viktor Vladimirovich Gerashchenko, chairman, Board of Directors of the USSR Gosbank; time and place not specified]

[Text] Biographical Data: Born in 1937, Russian. Graduated from the Moscow Finance Institute. Specialty—finance and credit. Member CPSU. Began his labor activity as an accountant. Then worked as inspector, expert, and department chief of the Administration for Foreign Exchange and Cash Operations of the USSR Vneshtorg [Foreign Trade] Bank. Was director of the Moscow National Bank in London, manager of branches of this bank in Lebanon and Singapore, chairman of the

board of directors of Ost-West Handelsbank in Frankfurt am Main (FRG). Beginning in 1985—first deputy chairman of the board of directors of the USSR Bank for Foreign Trade Activity.

[Question] Working in the system of the USSR Bank for Foreign Trade Activity, you had the possibility of making a thorough study of world experience in the sphere of banking business. What from this experience can we use in our country?

[Gerashchenko] The restructuring of the economic mechanism in the country on the basis of commodity-money relations, decentralization of the economy, and the creation of conditions for independent decision-making, if we are to proceed from world practice, without a doubt, will require changes both in the credit and banking system of the USSR. The basic thing here is the change of the methods of regulation of the money and credit quantity, based on economic criteria, the introduction of new forms of savings for enterprises and the population, the creation of a network of commercial banks for alternative ways of granting credits to economic organizations.

[Question] What ways do you see to increase the role of Gosbank in the economic life of the country, to strengthen its independence?

[Gerashchenko] As a result of the banking reform of 1987 and the creation of five specialized state banks, the role and possibilities of the USSR Gosbank have turned out to be somewhat weakened. It became, as it were, the "older brother" among equals. In countries with developed commodity-money relations, there exists a two-tier banking system, where only the central bank is granted the right to issue money and to determine the credit and money quantity. Ahead lies the development of banking legislation, which will make it possible to strengthen the role of Gosbank and to determine its interrelations with the branch and commercial banks, including specialized banks.

[Question] How, in your view, should the interrelations of the USSR Gosbank with the USSR Ministry of Finance be organized?

[Gerashchenko] The interrelations of the country's banking system with the Ministry of Finance that have taken shape lead to the merging of the spheres of the use of non-repayable budget financing and bank crediting, to the artificial exaggeration of effective demand in the economy, and the destabilization of money circulation. Bank credits which cover the expenses of the state budget and which are transformed into budget allocations, as well as, in essence, non-repayable financing masquerading under the guise of increasing the indebtedness of enterprises and industries, undermine khozraschet, create false points of reference in economic policy. To cover the budget requirements, we should develop a policy of direct state loans from banks, enterprises, cooperatives, and the population, accumulating their real savings. In the conditions of the centralization of credit and money issues in the hands of the USSR Gosbank, such loan operations will not be accompanied by an increase in the amount of money in circulation, if the bank credits, both short-term and investment credits, will be granted on a strictly commercial and repayable basis.

[Question] At the session of the USSR Supreme Soviet, proposals were heard concerning the transfer of the USSR Gosbank to the jurisdiction of the Supreme Soviet. What is your position on this question?

[Gerashchenko] In the countries with developed commodity-money relations, the Central Bank of the country, as a rule, is accountable, not to the government, but to parliament. However, both credit and the budget are sources of funds for the economy; for this reason, even in these countries, a serious policy of the financial and banking organs in regard to the regulation of the processes taking place in the country's economy, without its coordination, is inconceivable. The question of the transfer of the USSR Gosbank to the jurisdiction of the Supreme Soviet is a question of the time, a question of the development of commodity-money and market relations in our country.

[Question] What changes, in your view, must be introduced in the banking system that has taken shape in the country? What role in this system do you assign to shareholder and cooperative banks?

[Gerashchenko] The evolution of our economic mechanism must prompt the optimal credit and banking system. In order to give the credit and banking system self-propelled impulses of development, in my view, the following conditions are necessary:

—The construction of the credit and money mechanism on the principles of centralization of the issue function in the USSR Gosbank and banking work on the basis of real attracted resources;

—the organization of banking work on the principles of full khozraschet, including competition between banks, regardless of whether they are state, shareholder or cooperative banks;

—support of the initiative of the low economic links and the territorial organs of power in regard to the new banking establishments and the existence of the right for enterprises to choose the banks serving them;

—the adoption of banking legislation.

REGIONAL DEVELOPMENT

Republic Revenues, Budget Structure Analyzed

904A0017a Moscow EKONOMICHESKAYA GAZETA in Russian No 32, Aug 89 pp 6-7

[Article by V. Panskov, USSR first deputy minister of finance: "Expenditures According to Revenues"]

[Text] **The other day a session of the USSR Supreme Soviet, taking into consideration proposals and remarks by deputies, adopted a decree on proposals by supreme soviets of the Lithuanian, Latvian, and Estonian SSR on the transfer of these republics to cost accounting. The transfer of other Union and autonomous republics, oblasts, and krays to cost accounting will take place in the very near future. Therefore, a discussion of specific problems is put on the agenda. Budget formation is one of them. We invite readers to take part in a discussion of this problem.**

V. Panskov, USSR first deputy minister of finance, reflects on what budget planning oriented toward the observance of principles of social justice under conditions of regional cost accounting can be.

Big debates are now held on breaking budget planning stereotypes. In fact, it is no longer possible to accept the "traditional" methods of this work. The transfer of territories to regional cost accounting and the urgent need to ensure the observance of principles of social justice not in word, but in deed, obligate us to this. Is it really possible to consider normal a situation, when the volume of budget expenditures is approved in a tough single combat between the center and localities, ultimately, the center having the last word? Revenues seem to be of secondary importance. If planned expenditures are not covered by the revenues of an appropriate region, missing resources are allocated from the center.

Under such a budget planning system, when there is no concern about replenishing the till by earning money, dependent frames of mind have begun to be manifested to an ever greater extent. After all, it is important to receive the right to finance expenditures and to "get out" from the top capital investments and outlays for civic improvements and other urgent and not very urgent needs. And the more, the better, because there is no need to think about sources of financing additional expenditures—the center assumes the concern for this. Soviets of people's deputies have lost economic interest in earning money and in developing their own financial base.

I will cite only two figures as an illustration. The draft budgets of the Union republics submitted for 1990 envisage an increase of 10.9 percent in expenditures, as compared to the approved 1989 budget, with a reduction of 5.6 percent in their own revenues. Moreover, under the present territorial budget planning system territories that work less efficiently are in a better situation. After all, during the preparation of next year's budget superior bodies automatically compensate them for any disruptions in finances, reduced efficiency of operation of a subordinate facility, gaps, and losses. However, if soviets manifest initiative, work creatively, and invest material and financial resources in efficient measures, the amounts of deductions from the superior budget are reduced by the sum of additionally earned money.

The existing budget planning practice largely contributed to the fact that the increase in the Union republics' budget expenditures began to outstrip to an ever greater extent the increase in their own revenues. In 1980-1989 the Union republics' budget expenditures increased 1.9-fold, whereas their own revenues rose only 1.5-fold. As a result, the Union republics, essentially, live beyond their means, because the increase in their expenditures is covered to an ever greater extent by deductions from the Union budget. These gaps reached especially significant amounts in the Georgian SSR (expenditures increased 2.4-fold whereas its own revenues, 1.2-fold), in the Estonian SSR, 2.1- and 1.5-fold, in the Latvian SSR, 2- and 1.4-fold, and in the Ukrainian SSR, 1.8- and 1.2-fold respectively.

In the final analysis, the budgets of virtually all soviets began to be balanced in an ever greater proportion at the expense of all-Union sources. In the country's 1989 budget only 27.5 percent of the Union republics' budget expenditures as a whole, including about 30 percent of the local budget expenditures, were covered by their own revenues.

Revenues and Payments

What should be the new budget planning mechanism, which meets present requirements and principles of social justice and enables regions to change over to self-administration and self-financing? It is obvious that earned revenues, within the framework of which expenditures of an appropriate budget will be determined, should now become the basis for the formation of every region's budget.

The functions of all the links of the budget system are delimited clearly. At the same time, it is necessary to observe the basic requirement—to ensure for them a stable financial base with an indispensable strengthening of the revenue part of the Union budget—the main centralized fund of state financial resources.

Every soviet of people's deputies should have a stable list of the revenue sources that will enter its budget. At the same time, it is necessary to clearly determine for the future the range of problems solved with the funds of an appropriate budget. Only if these fundamental requirements are observed will soviets truly dispose of financial resources and independently draw up long-term and current plans for economic and social development. They will have an economic need to build up their own financial base and to search for new ways of attracting additional financial resources.

Precisely such a mechanism was included in the draft of "General Principles of Restructuring the Management of the Economy and Social Sphere in the Union Republics on the Basis of Expansion of Their Sovereign Rights, Self-Administration, and Self-Financing," as well as in the draft law on local self-administration and local economy.

In the course of discussion of General Principles other budget planning concepts were also proposed. They do not differ in the chief thing—every region should live

within its means. Hence the clear delimitation of revenues and expenditures in every link of the budget system and every soviet becomes a true master of its budget and draws up and fulfills it independently.

However, there are differences in the methods of solving this main problem.

For example, regional cost-accounting concepts put forward by the Baltic republics propose the establishment of a procedure, under which enterprises, regardless of their departmental affiliation, enter all the payments due in accordance with existing legislation into the republic's budget at the place of their location. The revenues received on the republic's territory are its complete property and, according to normatives uniform for all republics, it makes deductions from these revenues into the Union budget for financing general state measures. At the same time, general state measures, as a rule, imply only the country's defense, foreign trade, and the administrative apparatus.

The calculation of deduction normatives is very simple. The total sum of Union budget expenditures (coordinated with all the Union republics) is divided by the total number of workers in all republics (sometimes it is proposed that it be divided by the number of the country's inhabitants).

Thereby, it seemingly is forgotten that the economic potential attained by one region or another and its financial well-being, as a rule, are ensured through an investment of general state funds. The production structure existing in a region has been formed over decades. As a result, the specialization of individual regions in the production of specific products meets the needs of the entire national economy and, therefore, not guaranteeing high profitability for this region, increases the financial opportunities of the consumer of these products in another region. It is proposed that such a situation be consolidated. Therefore, regions with highly developed and profitable industrial production will receive resources greatly exceeding their needs. However, regions specializing, for example, in agricultural production will hardly have funds: After all, kolkhozes and sovkhozes are not as profitable as, for example, industrial enterprises and, moreover, enter only 3 or 4 percent of the profit (income) into the budget.

This can have serious economic consequences: The opportunities for implementing a centralized structural and investment policy are limited sharply. The Union government deprived of a stable revenue base will be completely dependent on republics. Thereby, the foundations for centralized economic management will be undermined to a decisive extent.

What Is To Be Done With the Deficit?

Another circumstance is also of great importance. When discussing the financial aspects of territorial cost accounting, we must not forget that the expenditures of the state budget exceed its revenues. This deficit was concentrated in the Union budget for many years and was partially distributed throughout the Union republics for the first time only in the 1989 budget. In the course of fulfilling the plan and the budget for the current year they will have to find additional financial resources amounting to more than 11 billion rubles for financing the expenditures envisaged in the plan. This makes up approximately 6.6 percent of their expenditures and only less than one-tenth of the country's entire budget deficit.

If the Union budget does not have other revenue sources except deductions from the revenues of republic budgets, all its expenditures, naturally, must be fully covered by the indicated deductions. On the basis of this, as calculations show, at the moment when the Union republics change over to the cost-accounting principles worked out by Baltic economists, the revenue sources at their disposal on the territory will cover only part of the presently financed expenditures in many republics.

On the basis of the budget approved for 1989 we made calculations of the changes that will occur when all the Union republics are transferred to the territorial cost-accounting principles worked out in the Baltic republics. The calculations are based on the condition, under which the Union budget finances the expenditures on the country's defense, the maintenance of Union bodies of state power and state administration, and basic scientific research. At the same time, all the Union republics make deductions into the Union budget according to a uniform normative depending on the size of the population working on a republic's territory. The results of the indicated calculations are presented in the table (in billion rubles):

	Total revenues	Subject to transfer into the Union budget	Remainder of revenue at republics' disposal	Republics' budget expenditures*	Shortage of financial resources	
						in percent of expenditures
RSFSR	237.3	53.9	183.4	219.0	-35.6	16.3
Ukrainian SSR	59.3	18.3	41.0	63.8	-22.8	35.7
Belorussian SSR	15.6	3.7	11.9	19.1	-7.2	37.7
Uzbek SSR	9.6	4.6	5.0	17.3	-12.3	71.1
Kazakh SSR	13.0	5.2	7.8	24.7	-16.9	68.4
Georgian SSR	4.6	1.9	2.7	7.1	-4.4	62.0

	Total revenues	Subject to transfer into the Union budget	Remainder of revenue at republics' disposal	Republics' budget expenditures*	Shortage of financial resources	
						in percent of expenditures
Azerbaijan SSR	5.6	1.8	3.8	6.6	-2.8	42.4
Lithuanian SSR	5.6	1.3	4.3	8.1	-3.8	46.9
Moldavian SSR	4.2	1.4	2.8	5.9	-3.1	52.5
Latvian SSR	4.9	1.0	3.8	5.5	-1.7	30.9
Kirghiz SSR	2.3	1.1	1.2	4.7	-3.5	74.5
Tajik SSR	2.5	1.0	1.4	4.2	-2.8	66.7
Armenian SSR	3.3	1.1	2.2	4.3	-2.1	48.8
Turkmen SSR	2.3	0.9	1.4	3.3	-1.9	57.6
Estonian SSR	2.5	0.6	1.9	3.4	-1.5	44.1

*Refined in connection with the transfer of individual types of expenditures to the Union republics in accordance with "General Principles..."

As can be seen from the table, from 16.3 percent of all the expenditures in the Russian Federation to 74.5 percent in the Kirghiz SSR are not secured by revenue sources when the Union republics are transferred to the territorial cost-accounting principles worked out by Baltic economists.

Under these conditions the possibility of maneuvering the country's financial resources is virtually ruled out, because the Union budget will not have appropriate financial resources for this. The Union republics will remain face to face with the budget deficit, which will also limit their opportunities in the development of the national economy and financing of sectors of general state importance.

Of course, when Union budget expenditures on the measures presented above (the country's defense and so forth) are approved, a certain decrease in them can and, apparently, will occur. However, taking their objective nature into consideration, it seems that this will not make it possible to sharply reduce the budget deficit. On the other hand, republics, having received virtually the country's total financial resources at their disposal, for the purpose of reducing the budget deficit, can reduce republics' budget expenditures now financed from the Union budget (construction of enterprises "not necessary" for a republic, but necessary for the entire national economy and so forth). The deficit in a republic will be reduced. At the same time, however, this can cause a reduction in the efficiency of the entire national economic complex, as well as of the industrial potential of all the republics.

I would especially want to note the illogic of the proposal by Baltic economists on a practical implementation of territorial cost-accounting principles. The indicated concept is built only at the level of a Union republic. Hardly anything changes in the formation of the revenues and expenditures of the basic link in the budget system—cities, rayons, and oblasts. There is a certain sense in this. After all, if to be logical and to develop the indicated concept thoroughly, on the basis of the principles proposed to us all the enterprises, associations, organizations, and institutions located on an appropriate territory should enter their revenues not into the budgets of republics, but precisely of cities, rayons, and oblasts, which will transfer appropriate deductions according to established normatives to republic and Union budgets.

In my opinion, the developers of the indicated concept do this not by chance. If a rayon or a city is made the basic "cost-accounting link," the entire sum of the state budget deficit will fall primarily on them. However, the concept presupposes—and this is evident from many publications—that local budget expenditures should be fully covered by appropriate revenue sources, that is, be balanced.

In general, the question of interconnection or, conversely, noncorrespondence of the budget deficit with the transfer of territories to self-administration and self-financing is of fundamental importance. The opinion that the transition to territorial cost-accounting principles should be made under conditions of a balance in every link of the budget system, including republic budgets of the Union republics, is often encountered in the press and, moreover, among practical workers. It seems that such a formulation of the question is illegitimate. The USSR state budget deficit is our common trouble and to impose its entire burden on the Union budget alone would be illogical, to say the least. Furthermore, the very fact of the deficit's existence, in my opinion, was one of the most important reasons for the need to restructure budget planning.

As an additional argument against assigning all revenue sources to territories I would also like to stress the following: As calculations show, cities, large industrial centers, and many regions, when adopting the Baltic cost-accounting concept, will have to deduct from 80 to 90 percent of all the revenues into the superior budget, because the needs of oblasts, Union and autonomous republics, and the Union budget for financial resources must be met from these funds. In particular, the USSR Ministry of Finance made such an analysis for a number

of the country's cities and rayons. For example, Kirovgrad in Sverdlovsk Oblast was supposed to transfer approximately 96 percent of all the revenues formed on its territory into superior budgets, Kalininskiy Rayon in Moscow, more than 96 percent, and Moskvoretskiy Rayon, almost 99. The normative of deductions into republic and Union budgets in the city of Ivanovo should make up more than 93 percent. Under these conditions the economic interest of local soviets in developing their own financial base and in finding new sources of financial resources will be undermined. After all, from every additionally obtained ruble the budgets of these cities will receive only 5 to 10 kopecks at their disposal. Under these conditions it is doubtful whether there will be economic interest in finding additional revenues.

In the provision affirmed in General Principles all the additional revenues from the implementation of such measures fully remain at the disposal of republics.

Subsidies Will Remain. But...

The problem of financial coverage for the solution of urgent social problems in republics, where the level of satisfaction of needs for individual types of benefits and services greatly lags behind the all-Union level and normative requirements, occupied a special place in the elaboration of General Principles. There were also many ideas and suggestions on this matter. In the final analysis, it was considered efficient to establish for such rayons specific grants and subsidies for the construction of schools, hospitals, and other projects of the social sphere. Subsidies for other purposes can also arise. In what will these subsidies differ from presently existing ones? After all, as is well known, five Union republics (the Kazakh, Uzbek, Tajik, Turkmen, and Kirghiz SSR) now receive them in the amount of about 6 billion rubles.

Present subsidies are the source of covering the expenditures of the corresponding Union republics, which have been coordinated by them with the center and reflected in the approved plans and budgets for the corresponding year. They are given out to republics on the basis of a lack of personal responsibility and without the definition of goals in connection with the shortage of revenues received on the territory of these republics. Naturally, under conditions when expenditures are formed by the republics themselves within the limits of earned funds these types of subsidies will lose the right to existence. However, this will happen beyond the limits of the 13th Five-Year Plan. As envisaged by General Principles, the indicated subsidies will remain in the next few years. It is another matter that their amounts, like the normatives of formation of republics' revenues, will be firmly determined for the entire five-year plan with an annual breakdown. This creates opportunities for republics to restructure production and to secure nontraditional, new sources of earning financial resources for ensuring their economic and social development during these years.

Now it is no secret to anyone that the present level of provision with individual social benefits in different republics is not the same. The data of the published table graphically attest to this:

Average Expenditures on the Maintenance of Individual Types of Social and Cultural Institutions in 1988 Throughout the Country's Regions (in rubles)

	General educational schools (per student)	Children's preschool institutions	Higher educational institutions (per student)	Hospitals (per bed)	Polyclinics (per medical post)
1. RSFSR	348	660	1547	4187	6588
2. Ukrainian SSR	321	560	1494	3924	5998
3. Moldavian SSR	304	499	1558	4248	7307
Total	319	550	1497	3954	6089
4. Belorussian SSR	352	559	1606	3970	6561
5. Lithuanian SSR	362	604	1666	4891	6838
6. Latvian SSR	363	654	1627	4588	7050
7. Estonian SSR	327	588	1878	5027	7539
Total	353	589	1645	4368	7033
8. Georgian SSR	378	518	1562	4395	6261
9. Azerbaijan SSR	342	601	1399	3610	6348
10. Armenian SSR	346	529	1557	4650	6932
Total	354	548	1495	4093	6282
11. Uzbek SSR	287	532	1285	3510	5875
12. Kazakh SSR	305	526	1301	3913	6670
13. Kirghiz SSR	295	520	1218	3514	5782
14. Tajik SSR	284	484	1276	3900	6949

Average Expenditures on the Maintenance of Individual Types of Social and Cultural Institutions in 1988 Throughout the Country's Regions (in rubles) (Continued)

	General educational schools (per student)	Children's preschool institutions	Higher educational institutions (per student)	Hospitals (per bed)	Polyclinics (per medical post)
15. Turkmen SSR	308	544	1159	3953	6263
Total	294	527	1276	3717	6206
Total throughout Union republics	330	601	1497	4072	6476

Such significant differences in the expenditure of funds throughout the country's regions are connected basically with the dissimilar provision with social and cultural institutions per resident. For example, in the Armenian SSR about 13 percent of the pupils study in the second and third shift. In the Russian Federation this percent reaches 21 and in the Uzbek SSR, 28 percent. Conversely, the number of hospital beds per 10,000 people in the Armenian SSR lags behind the all-Union level, comprising 86, and, for example, in the Latvian republic, 140. The same can be also be said about other indicators.

Consequently, it is a matter of carrying out the construction of new institutions in regions where the provision with them lags behind all-Union ones. Naturally, under the conditions of regions' work on cost-accounting principles the republics themselves and local soviets will have to do a great deal. At the same time, it seems that it will hardly be possible to solve the accumulated problems in the shortest time with their forces alone. The mechanism of specific subsidies should operate here with a view to ensuring a more rapid equalization of the level of regions' social development.

It seems that the amounts of the indicated grants and subsidies should be determined during the formation of the five-year plan and be approved by the USSR Supreme Soviet for a 5-year period with an annual breakdown. Naturally, these funds can be used only according to specific purposes. The funds not used during the year should be assigned for these purposes next year. When these subsidies are allocated, the course of fulfillment of the current year's budget by a republic should not be taken into account, that is, a republic's nonfulfillment of its budget or, conversely, derivation of additional revenues should not have an effect on the amount of the specific subsidy envisaged in the five-year plan for this year.

To Postpone for the Future?

The practical introduction of territorial cost accounting inevitably raises the following question: Should we consider the financial aspect of general principles ideal? Or, conversely, is this a compromise variant meeting the tasks of the transitional period alone? Nevertheless, despite the sufficient elaboration of the proposed mechanism of territorial management, it is, although important, only a stage in the development of economic and political reforms. As experience accumulates, the territorial management system, including the financial mechanism, to be sure, should be refined.

At the same time, in our opinion, individual financial questions require clarification right now. Their solution cannot be postponed for the future, bearing in mind, as envisaged in General Principles, that we must enter the 13th Five-Year Plan with a qualitatively new mechanism of territorial management. In particular, it is a matter of payments by state enterprises and associations into budgets at various levels. It is envisaged that enterprises of Union subordination will enter into the Union republics' budgets part of the payments for productive capital and the profit tax. At the same time, General Principles affirm that the amount of these deductions should be sufficiently big with a view to interesting republics in developing enterprises of Union subordination and in increasing the efficiency of their work.

As is well known, enterprises of Union subordination are distributed in an extremely nonuniform manner throughout the country's territory, including throughout the Union republics. Their basic share is concentrated in the RSFSR, the Ukrainian SSR, the Belorussian SSR, and the Kazakh SSR. Nor is the location of enterprises of Union subordination uniform inside these republics. On the basis of this it turns out that the payments of such enterprises will occupy a significant proportion in the budgets of some territories and they may not be at all in the budgets of other regions.

It seems that such a distribution of payments according to the budget level does not meet the demands for an increase in the interest of appropriate territories in the development of enterprises of Union subordination. After all, these enterprises will enter into an appropriate budget only part of their payments (according to preliminary calculations, up to 40 percent), whereas enterprises of republic and local subordination, virtually all payments.

Furthermore, it is envisaged that enterprises engaged in the production of consumer goods are placed at the disposal of republics. Precisely these enterprises are the basic turnover tax payers. Meanwhile, enterprises of Union subordination—this is basically heavy industry, machine building, and raw-material sectors—as a rule, do not pay the turnover tax. Hence, as we see, local

soviets have direct interest in developing, all things being equal, their own economy, not enterprises of Union subordination.

Here is another matter, which I would like to touch upon. What is to be done with payments into the budget at enterprises that have no subordination? Into what budget should they make payments from the profit? True, it is envisaged that between the Union budget and budgets of the Union republics the sums of payments from the profit of state enterprises, associations, and organizations not forming part of the system of USSR ministries and departments and of the Union republics are distributed according to their previous subordination. But if an enterprise not forming part of such a system is newly established and previously was not subordinate to anyone?

Nor should it be forgotten that the development of economic management methods can lead to the fact that enterprises and associations will not have a status of subordination at all and their interrelations with ministries will be limited to contractual relations in matters of implementation of a uniform scientific and technical policy and in a number of other matters. Therefore, the question of the need to change the distribution of the system of taxes into the budget among the links of the budget system will inevitably arise in the very near future. In connection with this it seems that it would be more justified to establish right now a system of payments according to types of budgets without dependence on the subordination of enterprises. In our opinion, every enterprise, without dependence on its status, subordination, and territorial location, should make payments both into the Union budget and into budgets of the Union republics. At the same time, the amounts of indicated payments separately into the Union budget and separately into the budgets of the Union republics should be established by superior USSR legislative bodies uniform for all enterprises irrespective of their territorial location.

UkSSR Council of Ministers Chairman on Economy, Ecology

18001596 Kiev PRAVDA UKRAINY in Russian 22 Aug 89 p 3

[Interview with V. A. Masol, chairman of the Ukrainian SSR Council of Ministers: "Regional Cost Accounting and Ecology"]

[Text]

[Question] Obviously, it does not have to be reiterated that the condition of the economy is theme number one in discussions at all levels, from the state—keep in mind the past session of the USSR Supreme Soviet—to the family. Recently ever greater hopes are being placed upon regional cost accounting in this regard. However, sometimes one hears the opinion (in particular this has been expressed by some USSR Supreme Soviet peoples deputies) that in the Ukraine there is no hurry with expanding economic sovereignty based upon the principles of self-management and self-financing, that supposedly we lack clear directions for the introduction of regional cost accounting. Vitaliy Andreyevich, what is your opinion about this?

[Masol] This is not at all true. I think that it is necessary to make these questions clear.

The republic government is operating from the assumption that the transition to regional cost accounting should, as much as possible, be made without sizable economic losses and pain to the entire national economy. This requires very serious theoretical and analytic work on several difficult questions.

Also, our economy's size and the number of its economic and production linkages outside the republic require unique approaches to this problem and a scientifically based forecast.

For a long time now preparations for converting to self-management and self-financing have been under way in the republic. Gosplan and scientific organizations have worked out three alternative sets of concepts for cost accounting in the republic. A draft of General Principles for the Economic Independence of the Republic is being developed on their basis. The economic council prepared specific measures for the transition to the new economic conditions approved by a Council of Ministers' decree.

These measures call for drafting several dozen laws and other normative-methodological documents (about 100) to cover restructuring the principles of the republic's socio-economic development, to determine the boundaries of the competence of high level structures in sectoral management and of the main element of an economically independent republic economy.

I also have in mind solutions to questions regarding the approval of principles for the new taxation and formation of budgeting systems in oblasts, cities, rayons, villages and the entire republic, taking into consideration the further development of leasing, cooperative, share owned and other forms for activities. Altogether this work is being done by more than 50 organizations: central planning and economic organs, ministries and agencies, scientific and educational institutions. These include institutes in the UkSSR Academy of Sciences, all institutes in UkSSR Gosplan, the UkSSR Academy of Sciences' Council for the Study of Productive Forces, executive committees for oblasts and for Kiev.

[Question] Even without thorough study it is obvious that oblasts and regions of differing economic potential have unequal initial conditions for introducing regional cost accounting. Is the government taking this into consideration in setting equal "starting conditions" for the republic as a whole and for its individual regions?

[Masol] Yes, several variants for cost accounting relations are being developed with this in mind. First, it is

possible to use differentiated normatives for deductions from oblast financial resources to the republic budget. Second, one can foresee the formation of a republic reserve fund for financial assistance (subsidies) to some oblasts during the transition period. These variants' advantages are now being examined.

There is another important problem that will take some time to solve: the financial situation of the republic's economy and the need for its immediate improvement. Here, under conditions of economic independence, the republic's big problem may be the lack of real resources to pay off bank loans from previous years. In the agro-industrial complex alone these total 7 billion rubles.

We should get out from under our debts. Much work is being done in this direction. As a result, this year about a billion rubles in debt will be paid.

[Question] Of course, there can be different measures to improve the financial situation and money supply, but what will be the fate of unprofitable enterprises?

[Masol] This is a very urgent question. I do not think that it is necessary to prove that the unprofitability of cost accounting and self-financing at the enterprise level is nonsense. Therefore, much work is now being done to improve the financial condition of enterprises and associations. In particular, there are provisions to considerably reduce the number of enterprises that are not fulfilling profit plans. This will make it possible to save more than 200 million rubles in budget allocations and to reduce the number of loss making enterprises by 610. Through budget allocations, bank credits and their own resources enterprises and organizations have almost completely eliminated the shortcomings in their own current assets. In 6 months we found 820 million rubles to reduce the budget deficit. By the end of the year even more can be done in this direction.

[Question] Vitaliy Andreyevich, can there be regional cost accounting with the presently existing prices and price formation system?

[Masol] Here there should also be complete clarity. We understand that the present price system, with all its shortcomings, is a product of the historical development of the entire country's economy. It is also obvious that these prices do not meet the requirements of economic reform.

Take just the purchase prices for agricultural products. The situation here cannot be considered normal. With the republic's transition to cost accounting and self financing it is simply not permissible. The lack of economic substantiation for prices has led to a situation where regions with higher costs also have higher production efficiency. For example, the cost of a ton of milk in the Ukraine is roughly equal to that in Belorussia and the Baltic republics (296 rubles here and 284-303 rubles there). However, last year our sales price was 367 rubles, while in the Baltic republics it was 406-453 rubles, and in Belorussia, 514 rubles per ton. As a result, their profitability is 2-3 times higher.

There is a similar difference in the economic efficiency of beef production, while pork production in the republic is losing money, but at the same time in Belorussia, where production costs are 102 rubles higher, the profit rate is 33 percent higher. The situation is similar for many other types of products. Therefore, we think that the republic's economic sovereignty, its self-management and self-financing can become real only through the mandatory introduction of the very important principle of price stimulation for production in regions as proclaimed in the March (1989) CPSU Central Committee Plenum.

However, the price reform has been postponed somewhat. This is an additional complication, because with existing prices it is difficult to attain economically justified, and therefore mutually advantageous exchange of commodities between republics. In the first stage there could be some kind of compromise, but we have not even reached this.

Our positions are clear here: The republic should reliably know its contribution to the country's economy and how much the sales of products provide for social and economic development. Under these conditions it is very important that prices do not become the reason for unequal exchange between republics. This could disrupt the very basis of cost accounting.

This is a short answer to your questions about regional cost accounting. I only want to stress that we are making the preparations as quickly as possible.

[Question] So far you and I have talked about problems in the development of regional cost accounting. However, all this may be for nothing and all our efforts in vain if the ecological crisis is not stopped. True, much is being done in the Ukraine to improve the environment, but what are the basic directions in this activity?

[Masol] We delineate three main directions of work to solve this difficult problem.

First is the planned implementation of comprehensive measures to reduce environmental pollution by harmful industrial, urban and rural wastes. We are allocated sizable state resources towards these goals. In just 3 years of the current five year plan they exceeded 1.3 billion rubles.

There are already some results from this work: emissions into the atmosphere have been reduced by 1.2 million tons, 77,000 hectares of damaged land have been recultivated and transferred for use, important measures have been implemented to reduce the pollution of reservoirs and to improve water resources. It is sufficient to note that water use per ruble of national income has declined

by almost 15 percent over 3 years. The entire growth in industrial capacity is supplied exclusively by increases in recycled water.

Recently the republic government approved a program to improve air quality in the airshed. Its main goal is to reduce harmful emissions by motor vehicles. In large cities they account for 60-80 percent of all emissions. This program calls for 3 years of work rebuilding and technically reequipping petroleum refineries in the republic, organizing the production of low sulfur diesel fuel and lead free gasoline. Already this year its share in total gasoline production should increase from 13 to 45 percent of all gasoline.

The second major direction is to create an ecologically based strategy for further economic development in the republic, taking into account the condition of its natural resource potential and the increased technogenic stresses upon the environment. This strategy is reflected in the Scheme for the Development and Location of Productive Forces in the Ukrainian SSR to the Year 2005, the compilation and coordination of which is now being completed. This document foresees fundamental structural changes in the republic's economy about which I have already spoken in a speech to the USSR Congress of People's Deputies. In particular, our intentions are directed towards restricting the development of the mining sectors and industries which are harmful to the air, land, resources and the environment.

[Question] How are these approaches being realized in practice? Just what specific examples of the government's position can you give?

[Masol] I can say that the republic government has refused to permit the construction of several chemical, petrochemical and microbiological industry facilities and has forbidden industrial construction in the Crimea that is not directly related to meeting the needs of the local population or tourists. The republic also forbade the construction of the Dneprovsk-Bug water resources project and the Konstantinovka GAES, part of the South Ukrainian complex. Also recall the rejection of the ecologically dangerous Danube-Dnepr Canal, and the stricter limitations upon new industrial construction in large cities and in ecologically sensitive regions.

Problems in power engineering development have a special place in this work. They are very complicated and are closely linked to limited fuel resources and to the objective need to further increase the production of electrical and thermal energy to meet the growing needs of the economy and the public. I think that we should stick to a balanced and realistic approach to the power engineering development, either thermal or nuclear plants. Even from an ecological perspective there are quite complicated problems to solve in these two directions. Thermal power plants account for about one-third of all industrial emissions of harmful substances into the atmosphere. The negative aspects of present day nuclear power plants are also widely known.

[Question] Vitaliy Andreyevich, what is your position on these questions? Do the Soviet and republic governments have similar views on the development of nuclear power in the Ukraine?

[Masol] I should firmly state that in contrast to the viewpoints of representatives from some Soviet organs, we are for the minimally necessary development of nuclear power in the republic, and only at existing nuclear power plants and those under construction. The maximum capacity should be within the limits already agreed upon with the republic and approved in designs. Based upon this viewpoint we have already forbade the construction of eight blocks at the Chernobyl AES. Neither will the Odessa and Kharkov ATETs be built. There is a ruling to halt the construction of the Chigirin AES and soon a decision will be made to prohibit the construction of the Crimean AES.

Given our limited possibilities for the construction of nuclear and thermal electric power plants, scientists in the republic, and in particular at the Academy of Sciences, should make more proposals about energy conserving technologies and new energy resources.

Finally, the third direction in our work is the creation and use of an economic mechanism for resource use. The free use of natural resources and the lack of any economy responsibility for environmental pollution substantially reduces the efficiency of the present system for planning and managing natural resource use.

The ecologization of economic management at all levels is primarily based upon payment for the use of natural resources and compensation for damage infliced by all types of environmental pollution. This mechanism is already being experimentally introduced in several cities and regions in our republic. We think that the use of economic tools will considerably improve natural resource use.

These are my answers to your questions about solving ecological problems.

Savisaar Press Conference Focuses on IME Implementation

18200467 Tallinn SOVETSKAYA ESTONIYA in Russian 13 Sep 89 p 2

[Report on press conference by E. Savisaar, Chairman of the Estonian SSR Gosplan, others: "IME: A Decisive Preparatory Stage"]

[Text] **As has been reported, on 7 September a press conference was organized at the Press House by the EsSSR Gosplan. Journalists' questions related to the implementation of the IME (Self-Managing Estonia) program were answered by E. Savisaar, chairman of the republic's planning agency, his deputies E. Rooze, M. Pilv and E. Terk, and other specialists. It was noted at the conference that most questions came from**

SOVETSKAYA ESTONIYA reporters. The following are answers to some of them.

[Question] The republic has submitted the USSR Draft Law on Transferring Estonia to Economic Accountability to Moscow. You have now received the USSR Supreme Soviet resolution. Is there any difference between the two documents?

[Answer] The draft law and the resolution are in essence one and the same document. The resolution gives the republic broad opportunities to carry out economic reforms and shift to economic accountability. Many issues, however, remain open. The resolution also recognizes our own special concept of economic accountability, IME. Our schedule for the shift was also accepted, with the target date of 1 January 1990. Now we are equal partners in future negotiations with Moscow.

[Question] Are Estonia's and Lithuania's concepts of economic accountability identical?

[Answer] There are no radical differences between them. Those that do exist are primarily related to differences in the economic structures of the two republics.

[Question] What measures to fight inflation do you plan to implement in the republic?

[Answer] Starting in January 1990, we will introduce so-called payment checks, or certificates. A certain percentage of Estonia residents' incomes, such as salaries, pensions and stipends, will be paid out in the form of such checks. We have not yet set the exact share of such checks in the total monthly income, but it will depend on the supply of goods in retail trade. Those who hold such certificates will be able to buy goods in short supply, especially manufactured goods, at stores specially designated for this purpose. When making payments, no identification will be required. The republic's Ministries of Retail Trade and Finances will put together the list of goods to be sold only for certificates by 1 December 1989. Deposits at savings banks will not be paid out in the form of certificates. Certificates will be freely exchangeable for rubles.

There have been proposals also to set quotas for the exportation of goods in short supply from Estonia. The idea of introducing its own currency in Estonia has not been forgotten, either. But we plan to start implementing it only in 2 or 3 years.

[Question] Do you intend to make Estonia's own currency convertible in world financial markets?

[Answer] It is the goal of the country as a whole to make the Soviet ruble convertible. To achieve this we need, first of all, to make sure that currency in circulation is generally covered by goods and services. The same principle is applicable to the republic's own currency, if it is introduced at some future date.

[Question] What is being done in the republic to increase exports and therefore hard currency earnings?

[Answer] First of all, we must change the system of hard currency payments. Everything (or almost everything) the republic earns on its own must be retained here. Currently, however, we have a rather bleak picture. For instance, the cruise ship "Georg Ots" earns a profit of some 7 million hard rubles a year, but the republic gets almost nothing. In our opinion, this is an injustice. There are many other similar examples.

Naturally, the republic should restructure its economy to be able to sell a much larger share of its output than currently for freely convertible currency. To achieve that, we may have to reorient certain manufacturing plants. Another source of foreign currency is international tourism. We plan to increase it considerably. Some foreign currency also comes from joint ventures; there are 65 of them at present and they will be developed further. Profiting from Estonia's geopolitical position, we could also earn hard currency by trans-shipping international freight through the republic's territory.

Another possibility is to establish hi-tech cities, or hi-tech parks, tapping, for instance, the resources of the EsSSR Academy of Sciences' research institutes, the Tallinn Technical University and the Tartu University. The scientists' task will be to develop and put into production rapidly new advanced technology. There are other sources as well.

[Question] Once the republic switches to economic accountability, will some enterprises have to be reoriented or scaled down?

[Answer] We have already mentioned reorienting enterprises to the export market. As to the domestic market, it is doubtful that under the conditions of market economy, which is our end goal, there will be any need to change the profile of enterprises whose output has no demand within the republic. Such output could be profitably sold in other regions of the country. If that market for some reason shrinks, the enterprise will have to take steps to start producing goods which are in demand either in the Soviet domestic market or abroad. The republic will provide assistance in this matter, in particular by retraining both workers and specialists.

[Question] The issue has been raised in the country of switching to world prices. Will the economy of the self-financing Estonia suffer from this change?

[Answer] Raising prices for some forms of raw materials and energy is unavoidable. We must be prepared to work in new conditions. In this case, some types of goods currently produced in the republic will most likely become unprofitable. We should be more decisive in switching to long-term trade contracts with customers in other republics, based on negotiated prices which take into account changes in input prices.

[Question] Which enterprises currently part of the union ministries' system will be transferred to republic agencies as a result of switching to IME?

[Answer] We are talking about enterprises which are not part of the defense industry complex. The exact list of such enterprises has not yet been put together. Moreover, it is not the change in the system that is at issue but taking enterprises out of the union ministry system and bringing them under the republic's jurisdiction. All enterprises taken out of the central management system will become state enterprises without agency affiliation. Their relations with the republic will be regulated not by administrative but by economic forces. Thus, all enterprises on the territory of the republic will be on equal footing.

[Question] Is it possible that the material and technical support for former union-level enterprises will be decreased as a result of this shift?

[Answer] Material and technical support will be provided based on market forces. Unfortunately, a large share of goods, including raw materials, inputs and semifinished products, are still distributed centrally. We have identified more than 2,000 such situations which exist between republic entities and some 89 union ministries and departments. To avoid departmental fiat and the risk of interruptions in the flow of materials and equipment stemming from it, we propose to sign a cooperation agreement between the USSR Council of Ministers and the EsSSR Council of Ministers, whereby all of the republic's requirements will be met based on orders from the republic's Gossnab. The agreement will provide for stiff penalties on the supplier for failing to fill orders, including fines in hard currency. We hope that there will be no worsening in the supply situation.

Division of Regional Economic Management Debated

More Local Authority Needed

18200474 Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 27 Sep 89 p 2

[Article by G. Alpatov, deputy chairman of the Interdepartmental Territorial Commission on Development of the West Siberian Oil and Gas Complex under the USSR Gosplan: "Economic Authority for the Region?"]

[Text] Tyumen—The state machinery is torpedoing all our good and correct laws. Here is a fresh example. The USSR Supreme Soviet decided to combine two related departments—oil and gas, that is, to abolish the Minnefteprom and Mingazprom [Ministry of the Petroleum Industry and Ministry of the Gas Industry] and to create the new USSR Ministry of the Petroleum and Gas Industry on their basis. But 2 days after the end of the session, on 8 August, a decision to separate the sector once again came from the USSR Council of Ministers Bureau for the Fuel and Energy Complex: enterprises of the gas industry are being shifted from the ministry into some All-Union state concern, "Gaz."

I do not know how it is in other gas and oil regions, but for us in Tyumen, where the country obtains 60 percent of its hydrocarbons in liquid and gas form, incidentally, the news of the concern's establishment had the effect of a storm warning. It became clear that our plans and the aspirations and hopes of the people to finally cope with the production and social problems that have long needed attention were threatened by ruin.

In order to understand that I am not exaggerating in the least, it is enough to travel through our incrediblely rich and long-suffering oblast. It is doubtful that you will see such rapid growth in departmental selfishness which has brought such distressing consequences for the economy and the people anywhere in the country.

The gas flares blazing in oil fields all over the Ob region have become the talk of the town. About 15 billion cubic meters of the precious raw material disappear here each year only because the gas deposits are not at the disposal of that department. But untapped reservoirs of oil—estimated at roughly a half billion tons—remain in the gas fields.

As a matter of fact, nothing for the state or the public has been established in the territory of Tyumen Oblast. Everything is departmental. Even machine building. The Ministry of the Petroleum Industry established its own network of plants and repair bases in the Tyumen North, and the Ministry of the Gas Industry set up its own. Although they turn out the same product here and there, as a matter of fact, and they repair similar equipment.

Microrayons in the new northern cities belong to various departments, and for this reason common municipal services that function reliably have not been established, either. There is no single system of public health or commerce. Both of them have been pulled apart by departments as well. Even the people themselves belong to the departments.

All this together has brought the national economy financial losses, the real scope of which is difficult to imagine. One thing is clear: they amount to many billions of rubles.

Both the local authorities and the central organs have repeatedly made attempts to unite the efforts of ministries and direct them at implementation of the overall regional programs. However, nothing good has usually come out of this. Each of the sides has tried to assume less for itself and shift a little more to its partners. The program to develop the construction industry base has collapsed. Bricks and reinforced concrete structures still have to be brought to Tyumen construction sites from thousands of kilometers away. The projects are two or three times as expensive because of this.

The "Tyumen-North" highway has become a monument to interdepartmental discord. The Minnefteprom, Mingazprom and the Mingeo [Ministry of Geology] came to an agreement to build it on a shared basis, but the latter two ministries did not meet their commitments. Construction of the transport mainline, which the oblast

needs like air, came to a standstill. The same fate overtook the river ports at Nizhnevartovsk and the settlement of Sergino...

I believe, and it is already clear from what has been said, that the principle of departmental development of the North became obsolete long long ago. This is why the report that two powerful ministries were combining was received with such optimism in Tyumen. Especially as it was being fully coordinated with our plans to introduce regional cost accounting. The majority of our economic managers, as well as soviet and party workers, support the concept of a concern. But a regional one, not a sectorial one by any means. We have assumed that unification of the oil and gas industry should become the basis for it (as necessary, enterprises and associations of related sectors—geology, power engineering, construction—could join it as well on an exclusively voluntary basis).

The main objective of such a concern is the protection and full realization of enterprises' rights. Within the framework of the concern, they would receive the opportunity to combine their services and subunits of the same kind, develop cooperation and specialization, and more efficiently utilize production capacities, especially drilling and transport capacities. To develop social, cultural, and everyday services more rapidly and smoothly. With the help of a regional concern, enterprises could invest their profit in new production facilities such as petrochemicals and the food industry, for example. This would help to saturate the market more rapidly, and in addition it would resolve the problem of employment for second members of a family, which is becoming more and more acute in the northern cities and settlements.

There are other alternatives as well. Establish the Samotlorskiy, Surgut, and several other concerns within the framework of the leading oil and gas and agricultural regions and then unite them on the oblast level into a voluntary association.

But what is the state gas concern promising? Judging by the provisions, just the opposite. A clear-cut division on a sectorial basis is much stricter than economic subordination to the center under the ministry (a noteworthy detail: the concern plans to immobilize and centralize all the profit of the associations, and allocate funds afterward to the local components). The power is concentrated in the hands of the board and its staff. Whom does this benefit?

At any rate, the managers and labor collectives are linking their future only with the intensification of enterprises' economic independence, overall development of the region, and the transfer of actual authority to the local organs of administration.

Advantages of Sectoral System Cited

18200474 Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 27 Sep 89 p 2

[Article by V. Filanovskiy, first deputy minister of the petroleum and gas industry: "Economic Authority for the Sector?"]

[Text] It is hard to believe what is taking place in industry now. Our petroleum sector, as a matter of fact, is the country's principal breadwinner. It is painful to see how it is collapsing when it was flourishing in former times. The collapse is proceeding haphazardly, but what will happen tomorrow?

We have made a scapegoat of the sectorial ministries. Are the ministry "bureaucrats" behind all the economic troubles? However, words are words, but bureaucratism continues to flourish. Only now the ministries themselves are enjoying its fruits. The question of combining industrial ministries was decided somewhere at the very top. Representatives of the sector were not involved in this. Once again the fate of the sector is being decided outside the sector. If this is not an administrative and command style, just what is it?

It is not out of place to consult specialists in any question. A system of ministries may be accepted or not accepted. But it is doubtful whether anyone can deny the fact that for decades the best and most experienced specialists have been selected from industry to replenish the ministries' staffs. I am confident that our comrades could add something helpful! And it is quite natural that this venture has collapsed. The gas workers have established an independent concern.

It should not be thought that we are all opposed to economic reform. In realizing the state of affairs in the sector and outside it, many of us see the need for changes very well. But change for the sake of changeand hasty and unreasoned actions will not bring relief. They are capable only of aggravating the situation and of discrediting the very concept of perestroyka. The overwhelming majority of enterprises today are not prepared and do not want economic independence. Because they are unable. They are headed by strong persons, but they need time to learn to define their policy independently. But the current situation of deepening chaos is not conducive in the least to the acquisition of the needed experience.

I am certain that the cutback in ministry staffs should proceed in parallel with the establishment of elected coordination organs which exist on the resources of enterprises and implement a common sectorial policy. An outrageous practice has taken shape today—enterprises are paying planning and scientific organizations over and over again for the same developments. This "cost accounting" is profitable to someone, of course. However, internal sectorial cooperation was not developed so that it could be so easily rejected. At least scientific research and experimental design work must be conducted by joint efforts.

They are demanding that we concern ourselves only with strategic questions, entrusting all "routine business" to the enterprises. But do the enterprises themselves want this? I am a deputy minister, and 90 percent of my work day (it lasts from 0730 to 2130, as a rule) is spent on precisely this routine business—at the enterprises' request! Someone does not have enough of something, something is not turning out—everything is decided through Moscow. Let us assume that the ministry has disappeared, but the problems will remain! Many of us would just sigh with relief to break loose from this cycle. Especially as the so-called "ministerial privileges" are no more than a myth. The country, like that priest in Pushkin's tale, continues to hunt for the low prices; we are economizing in management in order to lose in the lack of order.

The laws and directives adopted within the framework of economic reform look much better on paper than they do in reality. They say: get credits in the bank. But there is no money in the bank. They are demanding that 100 drilling brigades be abolished in Tyumen. A ridiculous requirement, like a bolt from the blue. In order for a brigade to be put together properly, 3 or 4 years are needed. The capacities needed were developed over decades, but they are being destroyed in an hour.

There is no decree on the ministry to date. Let us assume that the ministry is not responsible for the day-to-day activity. But are we not responsible for extracting the oil? How can we manage technical policy when the finances and economic authority leave us?

Our sector was very disciplined before. The specific nature of the production demands this. However, it is disintegrating. We are just holding on to old ties and old prestige. But after all, the manager of an enterprise is not the manager of an enterprise, either. Demagogy is flourishing. How will we live, through slogans? People are losing the desire to work. The chief specialist of a main administration receives less than a worker, although the responsibility is not comparable.

Organizational problems that are unsettled are undermining production. This did not begin today, of course. There was a crisis in our sector in the 1984-1985 period. The volumes extracted began to fall. We underproduced 35 million tons at that time.

The intervention of higher organs and the vast amount of assistance that was provided helped to rectify the situation. This is where the premature euphoria began. But everything began collapsing in 1988 because of interruptions in equipment deliveries. We did not receive any of the modernization promised or any of the new types of equipment promised.

We have been living in a vacuum for the last 6 months. We write letters and receive no answers. Instead of an answer they take the resources that remain away from us. This year we will underproduce no less than 10 to 12 million tons of oil for the state order.

At the ministry's request, the Gosplan conducted an expert appraisal of our economic capabilities. The conclusion is not comforting—with the volume of economic resources which the sector will have at its disposal, the country will receive tens of millions of tons of liquid fuel less than it needs in the next five-year plan. Fulfillment of the Energy Program is not mentioned at all, either.

Everyone—from persons in Tyumen to members of the government and the Supreme Soviet—should realize that if we collapse, it will be impossible to get on our feet again. The situation is extremely serious. Persons of the older generation probably recall that there was soap even during the war. Where are we headed? Is the economic reform being implemented correctly? Perhaps we should move more slowly but with more careful consideration?

Sectoral, Local Control Advocated

18200474 Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 27 Sep 89 p 2

[Article by I. Lavrovskiy, SOTSIALISTICHESKAYA INDUSTRIYA economic commentator: "Economic Authority for Both the Sector and the Region!"]

[Text] It is easy to criticize perestroyka for being sluggish. But here we have a typical situation. Two letters, written by respected specialists. One says we must abolish the departments and establish something very similar to the Sovnarkhoz [Council of National Economy] on their basis. The other states: the collapse of the departments is already in progress, and is leading to very undesirable consequences, and the sector's management must be reinforced for that reason. Judge for yourselves: what is the government to do here? Which viewpoint should be given preference? They are both right, you know, although they assert opposing views.

So much has been said about the departments' dominant influence lately that we do not want to remind you of these "appalling facts of departmental arbitrariness" again. But is there a guarantee that after wresting the reins of government from the departments we will not create a new monopolist, a regional one this time? Indeed, it is as if the region has not taken part in this departmental "celebration of life" thus far. After all, no more than 13 percent of the industrial investments in Tyumen Oblast have been channeled into development of the social—and thus the regional—infrastructure. But does this attest to a certain unselfishness and the economic potential of the regional administration or does it attest only to the economic and political deprivation of the region?

They say that an experiment on a wide scale is impossible in sociology. People are not an object to experiment on, so to speak. But we have been experimenting on ourselves for decades, after all. And we should learn something from these experiments! For example, here is what the famous aircraft designer O. Antonov wrote in the mid-1960's. The main drawback of industry management, he noted, is that there is too much management.

An enterprise was managed by All-Union and republic sovnarkhozes, All-Union and republic gosplans, and so forth. That is, we already had this—the region was running the show. It was demonstrated in practice thast regional management does not guarantee a repudiation of administrative methods and approaches. On the contrary, competence declines and bureaucratism increases.

It turned out that neither the ministerial system of management nor the regional system can carry out the essential task. Both of them lead to bureaucratism and administrative and authoritarian methods of management. It follows that the transfer of management to a region is incapable of increasing its efficiency by itself. What is the root here, and thus the magic link in the chain with which we can pull the economy out of the swamp of the stagnation? Neither the ministerial nor the regional system of management eliminates monopolism. The top of this hierarchical pyramid is simply moved somewhere else. For this reason, we must take the steps which eliminate monopolism and which are conducive to the development of healthy competition (a literal translation of the word "konkurentsiya" is competition).

Big hopes have been pinned on the Law on the State Enterprise. But what was the mistake made by the developers of our economic policy, in my opinion? That they do not make a distinction between an enterprise's economic independence and its juridical status as an independent enterprise. The distinction between ownership as an economic category and ownership as a juridical category is thereby lost. As a result, instead of economic competition, a dispute flares up over who owns what. The argument is basically that rights should be given to the juridical owner, but not the actual economic owner. But an enterprise is not the economic owner of resources. The enterprise, as a rule, is a special element in the production system which is not in a position to plan the volumes of its output, market its products, or carry out a full-fledged social program. The independence of an enterprise is still only an abstract goal. It is still firmly attached to the super enterprise-ministry. For this reason, what V. Filanovskiy writes about is completely natural. Attempts to tear enterprises away from the existing system are leading to greater chaos, a decline in production discipline, and a decline in economic discipline. If we do not manage to make the necessary change, these centrifugal forces will tear the economy to pieces.

For this reason, the trend which is now beginning to appear and which leads to the formation of larger associations which are capable of actually speaking as an owner is quite understandable. Ones which are in a position to realize the economic rights of an independent enterprise. In certain cases the ministries are speaking in this capacity. The fact that the Ministry of the Gas Industry formed a gas concern is very significant. They realized that only all together will they be able to function as an individual enterprise. And to ensure consolidation of ownership on this basis, not its dispersal and expropriation. To really provide for self-financing itself and this cost accounting. They are capable of doing this. But on the other hand, the region also possesses this capability.

And the region, judging by G. Alpatov's statement, also wants to establish a large-sclae association in order to realize the same rights. But the question arises: should we adhere to the position of "either-or" which we have already examined and which we have been convinced does not eliminate monopolism, or should we really shift to the new position of "and-and." Both the region and the sector. That is, it must be realized that territorial ownership has the right to existence, as ownership of territory and resources. But industrial ownership also has the right to existence. Including large-scale industry, operating in the national market. The "Gaz" concern will also be the first representative of Soviet big business beginning on 1 November.

Outwardly nothing will be changed—the same people in the same places. But the fact is that a revolution will take place in the sector. By losing the prefix "Min-" [Mingaz, the Ministry of the Gas Industry] the gas concern also loses its government status and it will be put on the same level with all the other enterprises. The path will be opened for economic relationships with everyone, including the region.

Is G. Alpatov stating the question correctly when he speaks about the need to transfer important economic rights to the region? Absolutely. And this extension of the region's economic rights should be put on a firm legal basis. The region should be given the appropriate taxation tools and credits. It is expedient to borrow the concept of regional banks from the FRG (they have "land" banks); they are the headquarters for the economic development of territories. At the same time, we cannot deny the need for consolidating sectors. The region is not in a position to solve all the problems. The oil and gas sector operates not only in the national market, but the world market as well. And managing it from Tyumen individually, so to speak, is no better than managing it from Moscow. This in itself does not eliminate monopolism. The necessity of developing competition in the sector itself is another matter. We must think about how to compete with the gas concern. By establishing another gas concern—the specific nature of the united gas system prevents this. But it is possible to do this in the petroleum industry. A large-scale oil and gas association can be created on the base of the Tyumen Petroleum Main Administration. Large-scale petroleum associations operating in the national market can also be established in other regions as well. Take away the plan that binds both the producers and the consumers hand and foot. Give a chance to the oil workers to compete with the gas workers not only in the oil market, but the gas market as well. Devise a mechanism to protect the gas workers and the gas consumers from possible attempts of economic pressure now from the gas concern.

Out of all the many different alternatives that are possible, we must not select outdated systems in which one excludes another, but those in which one solution supplements another, and where different approaches coexist and reinforce each other. Where the sectorial approach supplements the regional approach, and the regional approach serves as an essential element in the realization of the sectorial approach. If we can do this, the economy will come out of the crisis.

ESSR Council of Ministers Debates Bills on Prices, Entrepreneurship

904A0029a Tallinn SOVETSKAYA ESTONIYA in Russian 12 Oct 89 pp 1, 3

[Article by L. Sher, ETA correspondent: "We Cannot Delay, but To Hurry Too Fast Is Inadmissable": "From a Session of the ESSE Council of Ministers Presidium"]

[Excerpts] **The closer we approach the beginning of the first cost-accounting year for our republic, the more intense become the sessions held by our government. Suffice it to say that on 9 October the ESSR Council of Ministers Presidium worked without a break for six hours consecutively. Ranking first at this session, for reasons which are fully understandable, was a discussion of two bills.**

It Is Easier To Avoid Mistakes Than To Correct Them

First to be considered was the bill on prices. It provides for both the already well-known, state-approved prices as well as those freely formed (by the marketplace or by agreement), which are less common to our society and which have been agreed to by the state.

However, it was not in vain that persons emphasized that the legislation is an integrated system, that one link depends on many others, whereas these others must be in accordance with the first one. The course of the discussion at the session of this republic's government showed that many paragraphs of the bill on prices are not in harmony even with the bill on entrepreneurship, which was discussed right after it. A hail of questions was also caused by the incorrectness in the terminology and by imprecision on the formulations. Members of the government likewise brought up quite a few substantive ideas. Thus, for example, it was stressed that this bill stems primarily from the interests of the enterprises, i.e., the producers, but does not reflect nor protect the interests of people, i.e., the consumers. It was noted that the bill constitutes the initial attempt to shift the economic mechanism in this republic to the principles of a market economy. But, unfortunately, it was not taken into account that, in order to make the transition, a specific period is needed when the rules of the game are not quite such as they should be.

An observer from the sidelines could gain the impression that the members of the government are too overparticular, because, after all, what the discussion is really about is an initial attempt, which has no precedent either in economy or in our legislation. But here we must take into consideration the fact that what we are talking about is a so-called framework law, stemming from which many other individual laws will be developed. And, therefore, even the slightest error in the framework law would bring about a chain-reaction of subsequent errors.

The situation was analogous in the discussion of the bill on entrepreneurship. The difference turned out to lie, perhaps, merely in the fact that the second bill evoked even more questions and ideas. Everything began directly with the name of the law. Although the word "entrepreneurship" figures there, the text puts primary stress on the conditions of creating, registering, and putting a halt to the activity of enterprises. The bill contains a great many references to other laws (in the planning stages), but it itself solves relatively few problems. Thus, it was noted that the bill does not specify the obligation and responsibility of an enterprise to the state organs and the organs of self-government; it does not fix state guarantees for the activity of an enterprise; nor does it establish the competence of the labor collective and the administration, the procedure for examining their disputes, etc.

Likewise closely tied in with these two bills is the draft of a third document which was discussed by this republic's government—a statute regarding the people's enterprise, already made known to readers by the newspaper VECHERNIY TALLINN. Here the principal subject of discussion was the principle of what basis should be used for selecting those enterprises for conversion to the status of "people's," and what basis for the others to be something else. Why, for example, must enterprises which have been converted to the status of shareholding societies purchase their fixed capital assets from the state, whereas the collectives of the people's enterprises are granted such assets as gifts? Because, after all, the rights of both categories are almost the same, even though, when shareholding enterprises are being liquidated, the value of their remaining property is divided among the shareholders, while, in the case of a people's enterprise (if any such property remains), it is returned to the state. Discussion was also evoked by the following purely theoretical issue: if it is affirmed that a people's enterprise is one of the forms of property owned by all the people (which is also true in the case of state property), then it follows from the draft statute that what we are talking about is a completely new concept of property—that owned by a labor collective, and, therefore, even the term "people's enterprise" is legally invalid.

There were also other, more or less substantive remarks, so that this bill too, like the previous bills, was returned to its drafters so that they could take into consideration the remarks and corrections made at the government session. The republic's ministries and departments pledged to submit their notes and suggestions to Gosplan and to the appropriate working groups.

In summing up the results of the discussion, I. Toome, the head of the government, noted that, with the expansion of the republic's genuine competence, the government will have to adopt more and more vitally important decisions, and every error in such decisions is fraught with serious consequences. This requires that the government's work also be placed on a new footing. Particularly now, during the period of preparing and launching the IME [self-managing Estonia], many draft laws and other normative acts will be coming in. Therefore, just as in all parliaments, the natural form of work becomes several "readings" of such documents. And the foundation was laid for the practice of the first reading at the session of 9 October. The general discussion, the questions put to the authors of these bills, the proposals concerning supplements and amendments, have allowed us to discover the bottlenecks and unfinished spots in these documents and to prepare them for the second reading.

Proceeding from this discussion, the following decision was taken: to give the ministries and departments a two-day deadline to submit their remarks and amendments, to allow Gosplan and working groups to submit the finished bills to the government for consideration on 16 October. The draft statute on the people's enterprise will also be examined anew in the immediate future. Because there is no time for entanglements or delays, nor must must we allow any errors to occur because of undue haste.

[passage omitted]

* * *

A decision was adopted that associations, institutions, enterprises, and organizations shall have their allocated volumes of ferrous and nonferrous metals, as well as metal items, reduced if they, with the appropriate resources being available, failed to fulfill their state assignments with regard to the procurement of scrap metal.

* * *

The government acknowledged the feasibility of eliminating the Commission for Combatting Drunkenness under the jurisdiction of the ESSR Council of Ministers. The draft of the appropriate Ukase will be submitted to the ESSR Council of Ministers Presidium.

A number of other issues were also considered.

Checks Will Not Stabilize Currency, Latvian Economist Says

18080069 Riga CINA in Latvian 1 Jul 89 p 2

[Article by A. Bergs-Bergmanis, USSR State Bank, chairman of the Latvian Republic Bank board: "A Few Thoughts On Problems of Currency Circulation in the Republic"]

[Text] The republic's Council of Ministers has proposed a broad discussion of the LaSSR economic independence (self-government and self-finance) project to narrow down and supplement the published theses. In this regard, as a person who comes into daily contact with the state of currency circulation in the republic, I wish to express my thoughts.

From year to year the situation in the realm of financial circulation in both our republic and in the entire nation is worsening. The amount of currency in circulation not covered by material value is growing at an increasing rate. The root of this negative process is not solely the fact that various goods of broad consumption flow from the republic's trade organizations to other republics for large sums of money. Already last year, and especially this year, payments of hard cash from bank deposits have rapidly grown in the republic. The rate of payment exceeds the rate of increase in the production of national consumption goods by more than four times. As a result, only every fifth ruble of those paid out by the bank this year as a supplement is guaranteed by goods produced in the republic. From this it follows that financial stability can be ensured by enterprises that would not only limit the inflow of money from other republics but would also guarantee the correspondence between the republic's inhabitants' monetary incomes and the amount of produced broad consumption goods and the range of payment services offered to the population.

It would be unrealistic to hope that the production rates of broad consumption goods could exceed 20 and more percent annually. These growth rates have currently been achieved by payments of hard cash from bank deposits. Therefore, along with an expansion of rapid production of goods and growth of payment services, an important role could be played by those economic enterprises that would avert payment of money not practically owned. Therefore, when supporting the proposals suggested in the project connected with credit reduction, levelling the production balance, increasing economic efficiency, expansion of good- money relations, and movement towards the introduction of freely convertible currency, at the same time I wish to express my thoughts on the version endorsed in the project to temporarily issue a republic monetary unit in check form in rubles.

Whether in this fashion it will be possible to achieve the proposed goals—to guarantee the republic's goods market and to create a stable currency—and what will be the consequences of this step, one can only guess. However, an analysis of the processes taking place in financial circulation permits us to make certain assumptions. I am convinced that the realization of theses ventures would noticeably reduce the ruble's purchasing power and complicate even more the problems associated with the circulation of currency in the republic.

This perspective is already included in the project itself, which states that checks "...would represent a stable currency that is completely covered by the goods and services requested by the population." From the above it

follows that the portion of the employment salary paid in rubles will have only a small coverage by goods, and in actuality it will have a "paper" value. Opposite "valuable" checks there will be "inferior" rubles. In this situation the predicted exchange rate of checks to rubles becomes unrealistic.

The formerly-used external trading bank checks, for which one could purchase import and deficit goods in special stores, were bought and sold on the "black" market for a price that noticeably exceeded their nominal value. In reality they became an object of speculation, and their new owners soon were more than a few immigrants from other republics. It would be naive to hope that checks that provide the opportunity to acquire deficit goods will not meet a similar fate. One can only ask what the buying and selling prices of these checks will be. It cannot but cause a further fall in the ruble's purchasing power, distrust in this currency, and efforts to exchange it for checks.

I consider that this will bring about a founded efforts to receive salaries in checks, not rubles, by people who sell their products at the market, sell agricultural products to the state, and provide payment services to the population. And if payments would, however, occur in rubles, then we can expect that in this case the upper limit for good and service prices would be proportional to the market value of checks in relation to rubles.

The project predicts that only a certain portion of salaries will be paid in checks—in the first stage not more than 20 percent of the calculated sum to be received in hard cash—therefore I think that the chance to acquire a whole series of high demand goods will be denied not only to the low-paid population group and therefore will strengthen social injustice. I think that the people who will receive monthly checks in the amount of 15-40 rubles will only be able to dream of buying furniture, television sets, refrigerators, and other long-use goods. Moreover, the further fall in the ruble's purchasing power will negatively influence the material situation of the larger part of the republic's population.

Besides the above considerations, I must also mention several other important ones. A check is a financial document active for a short duration, which provides its signatory with the possibility to receive a certain sum of money. It follows that, unlike cash, checks can be used only for a single purchase. Along with this there is a noticeable increase in expenses connected with the printing of checks, their delivery to banks, checking of payment, etcetera. According to temporary calculations, just the cost of transporting checks within the republic will annually reach around 320,000 rubles, but in the second phase, when it is planned to pay only 50 percent of the sum receivable in hard cash by check, then the cost will be more than 800,000 rubles annually. If we also add the cost of printing checks, which will not be small and whose exact amount printing specialists cannot currently ascertain, then we must consider whether the predictable results justify the costs and are compatible with the wishes of the majority of the population.

In case checks do not justify the hopes place on them, the question can arise of whether it would not be useful to introduce a freely convertible monetary unit in the republic. Several preconditions are necessary to make this wish a reality. The main ones—to saturate the internal market with quality goods and services and to create a strong export potential, which would guarantee a stable income in freely convertible currencies. Right now we are not ready for this. Years are needed for it. The world's experience after World War II proves this. It would not be wise to ignore this experience.

The introduction of a freely convertible currency is also unrealistic. Perhaps we should introduce an unconvertible, but still a republic currency? Maybe in this way it is possible to save the republic's population from the predicted outflow of goods resources and the influx of rubles from other republics? I believe that this path will still not solve the problem. As I already mentioned, the growth rates in the republic's population's monetary incomes noticeably exceed the growth rates in the production of consumption goods. Until this problem is not solved there cannot be any talk of a stable republican currency. But maybe in this way the outflow of goods can be delayed? I admit the possibility, it can partially succeed. Still, only partially. Because any currency, if for it one can buy deficit goods nonexistent elsewhere and potentially needed by the buyer, becomes an object of buying and selling. Furthermore, as facts prove, a "black" currency market forms, where the price is determined by supply and demand. One must also take into account the fact that, when inhabitants freely move from one republic, the change in currency must be secured. It would be possible to protect the internal market in these conditions only if there were a strongly controlled currency exchange (a norm, a mark in a document, and so forth) and a control on the amount and types of goods that could be taken out.

To back up what has been said, I would like to remind you that at the beginning of this year, after the currency exchange norm for travel by invitation to socialist countries was increased, to protect their internal markets several of these countries were forced to forbid the bringing out of certain goods and to set export duties for others. This experience once again proves that by itself a currency does not guarantee the prevention of the outflow of goods.

However, it is easier to criticize than to come up with concrete proposals, and the problem awaits a solution, therefore I would like to express my reflections. Until realistic, economic preconditions for the creation for a stable, convertible currency have been created, we can only speak of temporary solutions. When looking for a solution, we must keep in mind which of the possible versions requires the least expense, creates the least negative consequences, and as a result produces the greatest effect.

One of such alternative versions to be discussed could be the preparing of coupons, which would show a certain monetary amount and which, like sugar and soap coupons, would be given to inhabitants each month within the limits of specific sums. Within the limits of the amount of the received coupons, their owner could acquire "limited" goods, paying in rubles. In this case there would be no contradictions between the value of the ruble shown on the coupon and a normal ruble, because the former would not perform the functions of a means of payment. The coupon would remain in the store as a confirmation of the fact that "limited" goods have been sold, therefore the owner of the coupon would have a chance to control this process. The preparation cost of such coupons would also be less, because they would not act as monetary documents.

Of course, these coupons would be bought and sold by other republics' inhabitants as well, and a certain part of broad consumption goods would flow out of the republic, but, as I already mentioned, anyone of the aforementioned solutions does not solve this problem, involves more work, will cost more, and will produce more negative consequences.

AGRO-ECONOMICS, POLICY, ORGANIZATION

Ligachev Attended Central Asian Agricultural Conference Reported

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10 Sep 89 pp 1-2

[Article by L. Kalashnikov, N. Osychkin, special correspondents for SELSKAYA ZHIZN: "The Basic Problem for Perestroyka—Increasing Food Production in Every Way Possible"; for Ligachev's address at agricultural conference, see pages 71-74 of the DAILY REPORT FBIS-SOV-89-175 of 12 September 1989]

[Excerpts] **The weather in Central Asia and Kazakhstan is good; it is hot and the sun is a summer sun. Fall is not hurrying to this area as of yet. Yet its obvious characteristics are evident in the abundant bazaars and store counters. Kolkhoz and sovkhoz workers, cooperative workers and leasees have put a great effort into growing a harvest and into supplying cities and work centers with a variety of products.**

The inter-republic seminar-conference in the Kirghiz SSR was devoted to the problems of increasing production volume in the extensive region of the republics of Central Asia and Kazakhstan. The conference was opened by Ye. K. Ligachev, member of the CPSU Central Committee Politburo and secretary of the CPSU Central Committee. Seminar participants—directors of republic and oblast party committees, soviet and economic workers, kolkhoz chairmen and sovkhoz directors—visited Kirghiz enterprises and farms, where they became acquainted with the experience of production output and were able to exchange ideas on this question.

[passage omitted]

Ye. K. Ligachev was interested in current affairs and living conditions and answered many questions. In Kolkhoz imeni 21 Partsyezd he emphasized that several factors are the basis for the achievements of the collective. This includes cost accounting, in use here since 1965 and now moving into the realm of lease relations; the mandatory assimilation of progressive experience and scientific achievements; an increase in production and an improvement in feed quality by using soybeans and corn; and good management in building, enabling the kolkhoz to create normal living and working conditions. Ligachev noted that of course the stability of cadres is also of great importance.

"The chairman of the kolkhoz, Aleksey Vasilyevich Pak, has headed the enterprise for about 30 years now," said Yegor Kuzmich. "But in many kolkhozes and sovkhozes we see a cadres leap-frog, which naturally hinders the development of the agroindustrial complex."

In talks with the directors of republic komsomol organizations the secretary of the CPSU Central Committee emphasized that one of the main jobs of the komsomol and of young people, and not only of people from the village, is active participation in solving the food problem.

A special characteristic of the seminar speeches made by the first secretaries of the party central committees of the republics of Central Asia and Kazakhstan at the seminar was the fact that the problem of increasing food production was posed on a grand scale based on the possibilities for the more extensive use of the republics' own resources.

"At the beginning of the current five-year plan we were in a fairly difficult situation," said A. M. Masadiyev, first secretary of the Kirghiz party central committee. "During the past 15 years the consumption of meat, milk and meat and dairy products practically did not increase. Naturally, the people began to demand that effective measures be taken. How did we begin? We began with the dairy problem. We undertook a complex of measures directed at increasing the productivity of cows. Primary attention was given to people—milkmaids and herdsmen. We are creating the needed work and living conditions and are teaching workers to assimilate cost accounting and lease relations. The soviets of people's deputies, organs of the agroindustrial complex, trade unions, primary party organizations and komsomol organs of enterprises have aimed at this. Houses for livestock farmers, stores, showers, saunas with swimming pools, medical facilities and rooms for relaxation have been provided. We are setting the task of creating the needed cultural and living conditions for people in the next 2-3 years on all farms. We also plan to develop large farms with a productivity of 5,000-8,000 kilograms. We already have a foundation for this. Experienced enterprises of the Kirghiz Machine Testing Station, which were among the first to utilize inter-breed crossbreeding, sharply increased milk yield and last year produced almost 5,700 kilograms of milk per each of over 2,000 cows. Today milk yield will increase to 6,000.

Everywhere special attention is being directed into strengthening the feed base. In feed production labor organization has been fundamentally reexamined. Almost all brigades and links are now working according to contracts and lease relations are being developed. Sowing structure has been altered—the foundation for the feed base today consists of alfalfa, sainfoin, grass mixtures and corn silage. Since 1988 the comprehensive Belok Program has been in effect in the republic. The area in peas, legumes, rape and oil-bearing radishes is increasing. Mixed crops are becoming widespread.

There have also been noteworthy changes in finding a solution to the meat problem. Per capita consumption of meat products per republic resident has increased by 8 kilograms and has reached 48 kilograms, but has not yet reached an efficient norm. This is why the efforts of economic, soviet and party organs and scientists are directed at making a transition to intensive management of livestock raising. Breeding work and the improvement

in herd structure are being directed at this goal and the proportion of the maternal herd is increasing.

A. M. Masaliyev focused attention on the actions of USSR Gosplan and USSR Minvodstroy [Ministry of Water Resources Construction], which from year to year have been decreasing the volume of capital investments into reclamation and hydraulic engineering construction in the republic.

N. A. Nazarbayev, first secretary of the republic's party central committee, discussed the development of the agroindustrial complex in Kazakhstan.

"Just in the last 3 years almost 11 billion rubles have been directed into the development of the village," he reported. "In comparison with the average annual level for the 11th Five-Year Plan grain production has increased by 23 percent, meat (slaughter weight)—by 21, milk—by 12, and eggs—by 15 percent. In general gross production has increased by 17 percent and has reached 15,500 billion rubles. Moreover, almost the entire increase has been achieved thanks to growth in labor productivity. The number of profitable enterprises has also increased by a factor of 1.5. Food supplies for the population have increased."

"Republic party organization is taking specific measures to develop the economic management mechanismt. Of especially great significance is the improvement in the operation of sovkhozes and kolkhozes—work is proceeding to gradually transform them, on a voluntary and democratic basis, into a union of cooperatives and leasees. Lease relations and all forms of contracts are becoming widespread. Today leasees have at their disposal 82 percent of the plowland, about three-fourths of the cattle and sheep and almost two-thirds of the hogs. A new phenomenon in the republic's agroindustrial complex is the development of 200 peasant enterprises and 567 cooperatives. The private sector has moved forward noticeably—here meat production has increased by a factor of 2.5, and milk production—by more than half. Nevertheless, its possibilities have not been exhausted by any means. For example, the shortage of incubators, which in recent years has been among the goods that are in extremely short supply, is seriously hindering the supplying of the population as well as of enterprises. We must deal with this problem more quickly."

"In the near future potato production will be organized thanks to improvements in seed farming and to the transition to irrigation."

"It is clear to everyone that the resolution regarding the Aral Sea does not solve the problem. The region's residents find it difficult to explain such a simple rejection of the idea of redirecting Siberian rivers into the Central Asian region. I think that we must once again study the plan, perfect it and determine the genuine expediency and consequences of its implementation."

"And in the 13th Five-Year Plan," said the speaker, "the main direction in concentrating investments remains the branches of the processing industry. However, we will not be able to reequip them ourselves. This is why it would be more proper not to exhibit single prototypes in exhibitions but to more energetically organize the production of equipment that is in extremely short supply on the national scale."

"Deserving of special attention is the gasification of village settlements—right now only 78 enterprises receive supply-line gas although there are over 500 gaslines located in zones. We need metal to solve this problem on our own. We are using our initiative to exchange meat products for metal strips, which enables us to produce 5,000 tons of pipes ourselves. But this is just a drop in the bucket."

"In recent years we have been thoroughly involved in improving the use of our natural-economic potential," said I. A. Karimov, first secretary of the Uzbek CP Central Committee. "We have made some positive changes. Last year we raised 100 tons more livestock and poultry than in 1988, and during this time milk production increased by 330,000 tons. There has been an increase in the procurement of melon crops and vegetables. The economic indicators of enterprises have improved somewhat. However, due to certain difficulties the socio-economic situation in the village remains tense, as before. The level of food production still does not satisfy the population's demand. The supply of the most important food products is still lower by a factor of 1.5-2 than average nationalindicators. The condition of the social sphere in the village is cause for concern and alarm."

"This year is turning out to be a very difficult one," noted I. A. Karimov. "Rain downpours and frost in late April-early May brought enormous losses. Total losses equal 750-800 million rubles."

"It is very difficult to speak about all of this, especially since republic party organizations and soviet and economic organs have not done all they could to mitigate these types of losses and to achieve a large return per irrigated hectare."

"Let us look at our basic crop—cotton. During the last 3 years its productivity has comprised an average of 24.7 quintals per hectare."

In speaking about the low return of the created potential, the first secretary of the Uzbek CP Central Committee focused on individual fundamental problems that are seriously hindering the growth of effectiveness of agricultural production. One of the main problems is the inadequate development of land reclamation. In recent years its role has been unjustifiably minimized. Recent decisions on curtailing state allocations for this sphere have brought irreparable losses and in the future will bring even greater losses to agriculture in the Central Asian republics. We feel that making state policies in the area of reclamation and water supplies for land dependent upon unjustified and often simply dilettantish criticism and the attacks of some writers and the press is

replete with serious consequences. The absence of an economic, national approach to reclamation is resulting in the deterioration of the fertility of the soil and in an increase in the number of poor fields from the reclamation point of view.

Fruit and vegetable farming is a sore spot. Here too a mass of unsolved problems has arisen. One of the most important is delivery discipline. Uzbekistan provides 1.2 million tons of fresh fruit and vegetable products, melons and grapes for the national fund, and republic enterprises have begun to meet with unbelieveable difficulties in this work. Directors note bitterly that it has become easier to raise the produce than to sell it. How long will railroads do favors for enterprises? The average daily run of enclosed cars is 330 kilometers per day, or 13 kilometers per hour, and for refrigerated cars—500 kilometers or 21 kilometers per hour. This is why at best produce does not arrive in Moscow until the eleventh or twelfth day. What kind of quality can we talk about in this case? If we cannot solve the problem of procuring, storing, processing and selling produce today, then what are we going to do tomorrow when the area in food crops increases greatly?

"If we are to speak about specific directions in our activities, this involves firstly the consistent implementation of measures to improve work with cadres," S. A. Niyazov, first secretary of the Turkman CP Central Committee, told the seminar participants. "In addition to the rejuvination of cadres by means of more trained and experienced workers we see as our task making sure that every manager, no matter what post he occupies, is competent in his work and that he works with initiative, creatively and with awareness. We feel that this course is correct and that it is already yielding results—labor productivity within the republic's agroindustrial complex has increased by 10.5 percent, clear profits equal 573 million rubles and profitability—over 40 percent.

"Nevertheless," continued S. A. Niyazov, "we understand clearly that all of this is only the beginning of extensive work, that as of yet there has been no radical change in the development of the agroindustrial complex, and that existing reserves and possibilities are being used fully at all. It has not been possible to considerably increase the productivity of irrigated lands, and the productivity of agricultural crops continues to remain low. It is planned to assimilate intensive technologies for cultivating feed crops within the shortest possible time and to provide enterprises with better equipment for harvesting feed crops, preparing feeds and building feed storage facilities."

"In drawing the necessary conclusions from an objective analysis of the situation, we are making a priority of the task of bringing order to the land and of rooting out mismanagement in utilizing this land. Here the assimilation of scientifically-based crop rotations, the improvement of breeding, seed farming and agrotechnology and increasing the level of overall mechanization of all of production are being given priority."

"Special efforts are being concentrated on the steadfast improvement of living and working conditions in the village, on implementing the principle of social justice and on eliminating considerable differences between the city and the village."

"Work to increase food products in the republic," said K. A. Asloiov, secretary of the Tajik CP Central Committee, "is being carried out according to scientifically-based systems of agricultural production, of improving the reclamation condition of lands, of assimilating resource-sparing technology, of increasing the feed base for livestock raising and of restructuring the social and living conditions in the village. The republic has worked out programs for developing feed production and livestock raising, horticulture and viticulture as well as hydraulic engineering construction. The implementation of these programs will enable it to considerably increase the level of utilization of labor resources. Having critically analyzed the condition of the organization and reimbursement of labor, we have become convinced once again that economic methods cannot tolerate partial methods. Without providing independence to enterprises or complete assimilation of lease relations the growing investments into the APK [Agroindustrial complex] cannot provide a return."

"Within the republic 44 enterprises have made a complete transition to lease relations; in farming over 50 percent of the area is leased and in livestock raising 62 percent of brigades and links are working on a lease basis. Within the APK system there are 50 cooperatives, including 27 in agriculture."

"There has been some improvement in the economic condition of agricultural enterprises, gross production output is increasing, the clear income of kolkhozes and sovkhozes is growing and the number of unprofitable enterprises has decreased by more than half. But as before the problem of developing a storage base remains acute—demand comprises about 30 percent. In recent years the economic method was used to build 50 percent of storehouses directly at the place of production, but of course the problem has not been solved by this. This is why USSR Gosplan and the State Commission on Food and Procurement of the country's council of ministers must pronounce its weighty word."

"We have taken the course of building low-capacity processing shops directly in enterprises. However, the pace of this building is being hindered by the absence of equipment. The production of such shops has been organized by USSR Minaviaprom [Ministry of the Aviation Industry]. We submitted an order for 18, but our order has not been filled."

"We must mention that material-technical supplies to processing enterprises are not improving, and in many respects are deteriorating. The volume of building-installation work is increasing, but the pace is decreasing. In electrotechnical and cable production alone it decreased by 70 percent as compared to 1988.

Due to the poor delivery of equipment and materials capital investments are being assimilated slowly and the introduction of capacities is being interrupted."

Sh. A. Akhmalkhanov, chairman of the Central Asian Department of VASKhNIL [All-Union Academy of Agricultural Sciences imeni V. I. Lenin], B. I. Poshkus, deputy chairman of the State Commission on Food Products and Procurement of the USSR Council of Ministers, P. S. Fedirko, administrative chairman of Tsentrosoyuz [Central Union of Consumer Cooperatives], G. K. Pulatova, Tajik SSR Minister of Health, P. A. Palad-zade, first deputy minister of USSR Minvodstroy, V. P. Denisov, secretary of the VLKSM [Komsomol] Central Committee and others spoke about the fact that by effectively utilizing natural-climactic conditions in the sourthern republics, by introducing cost accounting relations, leases, contracts and cooperatives and by improving social conditions in the village it will be possible to significantly increase agricultural production output here.

Ye. K. Ligachev spoke to the seminar-conference participants. He critically analyzed the work of party, soviet and economic organs as concerns the fulfillment of the decisions of the March 1989 Plenum of the CPSU Central Committee. It was noted that a great deal was being done to improve food supplies to the population, especially in the Kirghiz SSR. As for this region as a whole, the pace of growth in agricultural production output is behind that of population growth.

The secretary of the CPSU Central Committee noted that it is very important to skilfully dispose of capital investments, to determine priorities in utilizing them. In the Kirghiz SSR, for example, the average annual volume of capital investments during the current five-year plan for the entire complex of agricultural operations increased by 11 percent in comparison with the last five-year plan, including within the non-production, social sphere—by 60 percent. This contributed to the fact that gross agricultural production increased by 13 percent, including livestock production—by 20 percent. There can only be one conclusion. In places where there is more concern about meeting the everyday needs of the village resident, of improving his social-living and production conditions, the return on production resources is higher.

The March central committee plenum recognized all forms of social property and management as being equal under the law. Extensive rights have been given to all forms of village enterprises and unjustified limitations on their development have been removed.

Practical experience convincingly demonstrates that cost accounting and leasing allow the village worker to develop initiative.

Party committees and economic organs must actively carry out the ongoing, painstaking work of training both kolkhoz and sovkhoz directors as well as leasees and provide all of the necessary conditions for the transition to new forms of management, to cooperative lease collectives, to associations of cooperatives and to state-cooperative enterprises.

An important role in supplying the population with food products is being played by private family enterprises. In the republics of Central Asia and Kazakhstan about 40 percent of vegetables, half of the milk, fruit and berries and almost half of the meat produced here come from private plots. In Central Asia, the land is worth its weight in gold, as they say. There are 0.24 hectares of plowland per capita population. But this is not the problem—the land is being used at half its potential. If the entire herd of livestock that is now on private plots were maintained in kolkhozes and sovkhozes, the country would need to spend over 40 billion rubles for the building of livestock-raising facilities and it would have to increase its wage fund for livestock raising by almost 3.5 billion rubles annually.

Ye. K. Ligachev focused attention on the need to increase production intensification in the APK, field fertility and farm productivity. There has been no mitigation in the problem of supplying the republics of Central Asia and the southern oblasts of Kazakhstan with food and forage grain. This situation has forced the region to import large quantities of grain from other parts of the country. The situation involving the development of the grain industry must be solved by increasing crop productivity (in the Kirghiz SSR yield is 70 quintals per hectare, but in neighboring republics—30-40 quintals), by assimilating intensive technologies, by increasing the skill of grain farmers and by providing for the material and moral interest and responsibility of labor collectives.

Feed procurement has been organized poorly. We must take measures to correct the situation. We still have time and possibilities for this.

For the Central Asian region one of the basic branches in farming is cotton farming. Within this branch we should also become fundamentally involved in the assimilation of systems of farming and intensive technology and the mechanization of labor-intensive processes.

Our country is forced to procure a significant quantity of southern fruits abroad, spending hard currency for this. At the same time many of the purchased products can be produced in the Central Asian republics and in southern Kazakhstan. Moreover, the importation of canned and confectionary fruit and vegetable items from other parts of the country continues here. Republic councils of ministers, executive committees of soviets of people's deputies and economic organs should responsibly participate in finding solutions to these problems in order to sharply decrease the import of products from abroad and from other parts of the country in the near future.

Further development of the national economy and of the entire agroindustrial complex of the region depends to a great extent on how reclamation problems will be solved, how rapidly errors in building and in the use of irrigation

systems are eliminated. The problem of problems is economizing on water resources.

The March Plenum of the CPSU Central Committee established the task of strengthening the production base of the processing branch and of creating a modern food industry in the country, said Ye. K. Ligachev.

The scale and newness of tasks to accelerate the development of the agroindustrial complex dictates the need to radically improve work with cadres. However, often with their selection haste is tolerated, and poorly trained, stray people are selected to management positions, which unavoidably results in work failures and gives rise to extensive interchangeability. Today the APK cadres policy involves strengthening primary links in kolkhozes, sovkhozes and processing enterprises.

Village party organizations and village rayon committees today live an intensive life. The party is undergoing perestroyka; it is essential to further actively encourage this process, to achieve the development of intra-party democracy, to facilitate free discussions of problems by communists and all workers, and to more fully consider the opinions of workers when finding solutions. We must move out of offices, work with the masses at the place where they work, live and rest, i.e., be near them, close to their concerns, have an influence on them, recruit them for the real management of society, and focus efforts and resources on organizational work to fulfill plans for socio-economic development directly in labor collectives

The party has developed the policy of perestroyka. The Soviet people are connecting the renewal of socialism with its strengthening, with finding the enormous possibilities within it.

But there are forces which interpret perestroyka completely differently—as the erosion of the foundation of socialism, as the creation of private property, and as the development of a market catastrophe, a multi-party system and the destruction of political stability. They cast aspersions upon the CPSU, defame communists and directors, are involved in political demagoguery but do not do anything themselves to help in a practical way to eliminate the difficulties that arise. The worse things are, the better it is for them.

Yes, the society is being transformed, and the party is being transformed. There are no alternatives to rejuvination. Today the priority within this process is party unity, the ideological and organizational cohesiveness of its ranks and the strengthening of ties to the masses. It is my deep conviction that today this is the most important political problem. Without strengthening party unity perestroyka will decline. Is it tolerable that some communists are fanning inter-national differences and are participating in anti-socialist, nationalist meetings?

Of course party unity is possible only on the basis of extensive democratization of intra-party life, party discipline, and strict adherance to the principle of democratic centralism and the requirements of CPSU directives.

In the Central Asian region there have been severe inter-national clashes. This obliges the party organizations of oblasts and republics to be extremely attentive to national questions, to take into account the interests of all nationalities and peoples and to demonstrate flexibility and principle.

Constant educational work must be carried out with people; they must be made aware of the fact that if there is no inter-national harmony and friendship among peoples there will be no effective work within the economic sphere, in enterprises, on fields and in farms and the dissolution of the union of soviet republics will be unavoidable.

Inter-national clashes are a blow to the living standard of every Soviet individual, including in the area of food supplies for the oblast, republic and country. Inter-national clashes are a blow to the individual security of persons. They require a socialist state; central and local power organs must create all essential conditions for a peaceful and assured life for their citizens.

The basic directions in party work to solve national problems are contained in the draft of the CPSU platform on this question.

For party organizations the task of the moral education of people, and the rooting out of bribery, theft and all types of crimes remain a priority. These phenomena remain and the attitude toward them must be all the more intolerant.

Without conscious discipline and legal order there can be no democracy or a harmonious functioning of the national economy. Active steadfast work to fulfill the decisions of the March Plenum of the CPSU Central Committee and the improvement of food supplies for the Soviet people are the work of literally the entire country—of both the village and the city.

Participating in the work of the seminar-conference were I. I. Skiba, director of the Agricultural Department of the CPSU Central Committee, and responsible workers of the CPSU Central Committee, the USSR Council of Ministers and the VLKSM Central Committee.

Conversion of Missile Base to Agricultural Use

18010887b Moscow PRAVDA in Russian
7 Sep 89 Second Edition p 2

[Article by PRAVDA correspondent V. Vorobyev from Pskov Oblast: "Rural Conversion"]

[Text] On the large desk of the chairman of the Pskov Cherskiy Kolkhoz, V. Sidorenko, lay a map of the fields.

"Do you see there that blank area?" said Vladimir Romanovich [Sidorenko]. "That was a former missile base. At one time around 300 hectares of our lands were turned over to it. And there were also more than 100 hectares from the state holdings. Recently, these areas were returned to us."

Winding through the spruce and birch is a narrow, concrete strip. It is flat as a table. V. Sidorenko confidently drives the jeep. The curves are taken without reducing speed. There is no danger. It is a lonely track. The cowberries bloom along the sides. There are billberry patches and then swampy areas with fine cranberries. You could see mushrooms with the naked eye. And when we halted for a moment to enjoy this beauty, we were again assaulted by a raw and astringent odor. This was the smell of the milk mushroom which grew in the thickets.

We drove up to an oblong hill which had been planted in birches.

"A hangar. Here we could house hundreds of cows," said Vladimir Romanovich. "Shall we take a look?"

Behind the impressive metal door were vast rooms. There was a high ceiling and a sound flood. One had merely to install a milk line, water line and provide conveyors for feed and removing manure.

Nearby was another similar room. Here had been the former garage for the combat vehicles.

"And here we will make a storage area for feed."

Not far off was another hill planted under pines.

"Here is another hangar. Here we will move in a group of cows," said the chairman. "And there, just look, are concrete 'patches.' There will be a summer milking area there and a bit further the manure storage."

Wending through the forest, we again, as they say, stumbled on structures. In one of them they propose organizing the fattening of hogs. In another the energetic chairman was thinking about growing mushrooms.

Then the road brought us to the military camp which was deserted and hence sad. We went into the mess hall. On the wall there was still a menu hanging.

"Just look how fine the mess is," exclaimed V. Sidorenko. "What a kitchen, just look at the tiles! And the refrigerators.... Here we plan to build a cheese factory. The productivity would be over a thousand tons of product a day. We have more than enough raw materials. The kolkhoz has over a thousand cows. And we are still adding to it...."

The chairman showed us the heated garages, the vegetable storage areas and the kvas shop. We had a look in the soldier barracks, the medical station and the bathhouses.

"Things were done well," said Vladimir Romanovich. "Clearly, the commander was concerned for this. And this is all good for us. The barracks are being rebuilt. From each we will produce two cottages."

Work was already underway at the power plant where there were mothballed motors and in the boiler room. The electrician V. Aleksenyev, the deputy kolkhoz chairman P. Rumyantsev and construction workers from the Pskov Raduzhnyy cooperative were testing the thermal networks, they were demothballing the equipment and repairing the water line. The camp will be in use by winter. Here the new owners will move in and the farm will begin operating.

Later we returned to the village along the meadowlands and the flax and grain fields. The chairman figured as follows: the construction of housing, production facilities, the power plant, boiler room and the laying of roads would have cost several million rubles. But just try to find the materials and manpower. But now it would take just several thousand rubles to "fix everything up."

What will the former military base provide for the kolkhoz? Milk production will rise by 20 percent, and the fattening of hogs will double. By winter there will be already around 2,000 hogs here. The Cherskiy Kolkhoz will begin supplying cheese for the entire rayon.

This inheritance did not come so easily to the kolkhoz. Sidorenko had to go to Moscow where he begged, demanded and persuaded....

LIVESTOCK AND FEED PROCUREMENT

Editorial Describes Ways to Boost Meat Production

18270143 Moscow PRAVDA in Russian 13 Sep 89 Second Edition p 1

[Editorial article: "In Debt to the Consumer"]

[Text] In recent years we have noted some changes in the development of the branches of agriculture. However, production growth is not yet meeting demand by far. The government has been forced to purchase grain, sugar, vegetable oil and other goods abroad.

Interruptions in supplies of meat and meat products create a special urgency and social tension. Whereas in consumption of milk and eggs the country meets its needs, there is a significant shortage of meat. As specialists have calculated, in order to correct the situation by the end of the five-year plan it will be necessary to double production growth. Is this a realistic goal?

Experience convinces us that the answer is yes. After all under equal conditions some enterprises flourish while others can hardly make ends meet. We can name dozens of kolkhozes and sovkhozes in which livestock farmers work on a level equal to world achievements. They

produce 6,000-7,000 kilograms of milk annually per cow, and up to a kilogram and more of daily weight gain in cattle and 600-700 grams in hogs. But this refers to individual enterprises and farms! In Belorussia during the last 3 years gross livestock production increased by one third, and beef production—by a factor of 1.4. Meat production has increased by 30 and more percent in Kaluga, Orel, Volgograd, Tomsk and Penza oblasts. The success is all the more noteworthy in that it was achieved when many enterprises, as for example in the Bashkir ASSR and Gorkiy, Orenburg and Chelyabinsk oblasts, made no progress or achieved insignificant increases.

Of course the reasons for the contrasts are varied. We can mention mismanagement, low production quality, a weak feed base and droughts and crop failures. Yet these things also happen to those for whom things are getting progressively better. Most farms have not yet been able to move onto the path of intensification.

Why, let us say, has there been a leap forward in the development of livestock raising for meat purposes in that same Belorussia? A new approach to production output has been adopted here. A special enterprise has been created in every region. Its own forage is used to fatten animals, utilizing progressive technologies and various forms of contracts.

The work of leading livestock raising enterprises such as Brest's Mir Combine and Penza's Ardymskiy Sovkhoz is instructive. Here a young bull leaves the meat conveyor weighing 450 and more kilograms at an age of only 14-15 months. Almost half the feed is expended per kilogram of weight gain than in the country as a whole. What is happening at the other "pole" of livestock raising? Each year over 7 million bulls come to combines with an average weight of 250 kilograms. Is this wasteful? Undoubtedly, because farms are underproducing millions of tons of meat. Another half million tons is lost because of the fact that that farmers hurry to take cows removed from the herd to slaughter instead of feeding them rations for a month or two.

Today enterprises have been given great economic opportunities. It would appear that they would more persistently seek out their advantages and multiply the country's food resources. Let us look at porkproduction. To satisfy demand we should have a minimum of 9 million tons of pork. We receive just 6.5 million. The branch is energy-intensive and requires a great deal of grain. However, it is a rapidly maturing one and the return on expenditures is rapid. Of course this applies only to those who manage the economy skilfully. Unfortunately, in the country as a whole feed expenditures are greater than the norm by a factor of almost 1.5. In Uzbekistan, Georgia and Turkmeniya they are even greater. With this kind of wasteful use of grain resources it is difficult to count on an abundance of meat or profitable farm operations. The answer here is seen again in the active assimilation of progressive technologies.

In recent years the production of broiler chickens has been developing fairly successfully. Nevertheless, per capita consumption of poultry meat has not yet reached 11 kilograms whereas in the U.S. it exceeds 30. This means that an acceleration is required here, an energetic increase in capacities and an improvement in the quality of labor. Today the average daily weight gain of chicks is not large—not much over 20 grams. However, there are poultry factories in which a daily weight gain of 30-35 grams is achieved. The difference is considerable if we keep in mind that on a national scale every extra gram of weight gain is equivalent to 60,000 tons of poultry meat.

Further intensification in livestock raising is unthinkable without a radical improvement in the food base and an improvement in the nutritive value of rations. The truth is basic, but nevertheless in many enterprises crops such as corn, peas, soybeans, sunflowers and alfalfa are given no attention by specialists. Yet if in the near future we do not double the production of vegetable protein raw materials, discussions about sufficient meat supplies will be invalid. What is the point of giving livestock grain in unprocessed and unbalanced form? Meanwhile, each year about 70 million tons of grain, almost half of the forage fund, is used for feed purposes without protein enrichment or special supplements.

Farms have begun the countdown toward fall; cold weather is approaching. How will livestock winter? Will there be enough feed? Right now forage reserves are somewhat smaller than they were last year. Their quality is no better. The enterprises of Uzbekistan, Moldavia, Tajikistan, and Tyumen and Astrakhan oblasts are lagging behind especially in efforts to create a feed base. Yet even last year's forage stores did not satisfy livestock raising by far. Does this mean we will have another shortage? How long will we continue to accept this?

Today agricultural collectives have greater economic independence and the opportunity for active innovation. But this does not mean that they can let things go their own way, that they can decrease demandingness and responsibility. The problem of food supplies is the sore spot in our society. Party, soviet and economic organs cannot avoid this. Joint efforts are needed in order to help farmers and livestock farmers to more successfully deal with their tasks.

AGROTECHNOLOGY

UDC 631.1:633.1

Growth in Grain Yields and Production in USSR Compared with Other Countries

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[Article by A.G. Belozertsev, Department of Agricultural Economics, MIISP [Moscow Institute for Agricultural Production Engineers imeni V.P. Goryachkin]: "Basic

Problems of Increasing the Yield of Grain Crops and Increasing the Total Grain Harvests"]

[Text] This article examines the tendencies in the development of the USSR's grain farming; it shows the structure of grain production in the USSR and the world's leading grain-producing countries, the principal main trends for increasing the grain sector's productivity by means of intensifying production.

When agriculture was converted to the intensive path of development, great possibilities were opened up for developing the grain sector. For a period of 26 years (1961-1987) there was a notable increase in the productivity of the grain sector. Despite a certain reduction in the sowing areas, the average annual grain production during the years 1981-1985 increased by 38.4 percent, and its yield by 46.1 percent of the 1961-1965 level. In 1987, based on the widespread utilization of intensive technology in cultivating grain crops, observing technological discipline, and applying a complex set of agrotechnical and organizational-economic measures, the total grain harvest amounted to 211.4 million tons, or 31.1 million tons more than the average-annual grain production for the preceding five-year plan. Our task consists of strengthening and developing these achievements.

One of the most important indicators of progress in agriculture is yield. V.I. Lenin pointed out that yield summarizes all the changes made in agricultural equipment and its economic-management organization.

Table 1. Dynamics of Certain Grain Crop Yields (All Categories of Farms, in Quintals per Hectare)

	Wheat				Barley							
Five-year plan (annual average)	winter	spring	Rye	Corn	winter	spring	Oats	Millet	Buckwheat	Rice	Legumes	Average annual yield
1961-1965	15.3	7.5	9.2	22.8	13.9	10.7	8.3	7.0	4.3	24.1	9.5	10.2
1966-1970	19.6	11.1	11.3	27.0	15.6	14.8	13.7	8.8	6.6	33.0	13.6	13.7
1971-1975	22.5	11.0	13.5	28.2	17.5	15.2	13.2	9.0	5.7	38.6	12.7	14.7
1976-1980	24.7	12.2	14.0	32.2	21.4	16.0	14.2	7.3	5.7	39.3	13.7	16.0
1981-1985	22.8	10.1	15.2	32.5	22.8	13.8	14.2	8.3	5.7	39.0	12.6	14.9
1986	28.0	14.3	17.6	29.5	29.5	17.4	16.6	9.5	6.3	42.4	11.7	18.0
1987	30.2	11.8	18.6	32.3	26.6	18.7	15.7	14.2	7.9	40.8	15.5	18.3

As may be seen from Table 1, there was a definite increase in the yield for all crops, although its rate is uneven through the course of the five-year plans. If the average grain yield for the years 1961-1965 is taken to be 100 percent, the in 1981-1985 it increased as follows: for winter wheat—by 49 percent, spring wheat—by 34.7 percent, rye—by 65.2 percent, corn—by 42.5 percent, winter barley—by 64 percent, spring barley—by 38.1 percent, oats—by 71.1 percent, millet—by 18.6 percent, rice—by 61.8 percent, legumes—by 32.6 percent. The average annual yield of grain crops in the USSR during the period being analyzed increased by 49 percent.

In 1987 the average yield of grain crops for the country as a whole was higher by 3.4 quintals than the average annual level during the years 1981-1985 and by 8.1 quintals higher than during the years 1961-1965. Despite this increase, the absolute size of the grain yield continues to remain low, and this is the principal cause of the grain shortage, particularly of grain used for animal feeds.

Wheat ranks first in the total production of grain (Table 2); second is barley (during the years 1981-1985 its production amounted 43.6 million tons a year, which is 2.2 times more than the average for the years 1961-1965); third and fourth are oats and rye respectively.

Table 2. Total Harvest of Specific Grain Crops in the USSR (All Categories of Farms, in Millions of Tons)

Five-year plan (annual average)	Winter and spring wheat	Winter and spring rye	Seed corn	Winter and spring barley	Oats	Millet	Buckwheat	Rice	Legumes	Total
1961-1965	64.2	15.1	13.3	20.3	6.1	2.64	0.78	0.39	7.49	130.3
1966-1970	90.0	12.8	9.6	30.8	11.9	2.87	1.21	1.04	7.25	167.6
1971-1975	88.9	11.5	10.2	43.6	14.8	2.52	0.95	1.75	7.38	181.6
1976-1980	99.7	10.9	9.6	55.1	17.2	2.32	0.96	2.30	6.92	205.0
1981-1985	77.9	14.3	13.1	43.6	17.5	2.36	0.99	2.57	7.68	180.3
1986	92.3	15.3	12.5	53.9	21.9	2.37	1.01	2.63	7.90	210.1
1987	83.3	18.1	14.8	58.4	18.5	3.93	1.30	2.68	9.95	211.4

If wheat production during the years 1961-1965 is taken to be 100 percent, then during the years 1981-1985 (on an annual average) it increased by 21.3 percent, that of barley—by 144.8 percent, and oats—by 186.9 percent. There was a noticeable increase in the production of groats (with the exception of millet). Among these crops there was a sharp increase in the production of rice. On an average for 1981-1986 it amounted to 2.57 million tons, or more than in 1961-1965 by a factor of 6.6. The total harvest of buckwheat increased insignificantly and amounted to approximately 1 million tons. In 1987, the total harvest of grain increased to 211.4 million tons; this is 81.1 million tons more than in 1961-1965, and 31.4 million tons higher than the 1981-1985 level.

Grain production in the world's leading grain powers is attested by the data of Table 3.

Table 3. Grain Production in the World's Principal Grain-Producing Countries[1]

	Yield, quintals/hectare		Total harvest, mln tons		Per capita, kg/year	
Country	1981-85 avg	1986	1981-85 avg	1986	1981-85 avg	1986
USSR	14.9	18.0	180	210	661	750
United States	42.7	46.8	308	314	1312	1302
France	52.5	52.0	51.4	51.1	942	924
Australia	13.9	14.6	25.0	24.5	1630	1536
Canada	22.1	25.0	48.9	56.7	1968	2215
Argentina	24.3	25.8	31.4	28.2	1060	909

1. According to FAO data.

V.I. Lenin considered per capita grain production to be the most important indicator characterizing the efficiency of agriculture. In 1986 per capita grain production in the USSR reached 750 kg. In order to fully satisfy the population with food products, create food reserves, and export grain products, per capita grain production must be increased to 1 ton. In 1986 Canada produced 2.2 per capita tons of grain, Australia—1.5 tons, and the United States—1.3 tons. These countries export a significant portion of their grain products to the world market: Australia, Argentina, and Canada—more than half of their total grain production, France—46.1 percent, the United States—one-third. During the 1970's and 1980's a number of countries (such as China and India), which had experienced grain shortages for a lengthy period of time, at present, thanks to significant transformations, achieved such a level of production that they were able to refrain from importing it from abroad.

Implementation of the Food Program in the USSR has made it necessary to further improve the structure of grain production, increase the total harvests of barley, oats, and especially corn and legumes, which are rich in proteins. This has been determined, in large part, by the development of meat-type cattle-raising, pig-farming, and poultry-farming, which are all major consumers of feed grain. The USSR has witnessed positive shifts in the structure of grain production; the following, quite stable tendency can be traced: there is a reduction in the proportion of grain to be used for human consumption (winter and spring wheat, rye), while, at the same time, there is an increase in the proportion of grain used for animal feeds (barley, corn, oats, and legumes); and the proportion of groats (rice, buckwheat, and millet) has remained unchanged (Table 4).

Table 4. Size and Structure of Total Grain Production in the USSR by Types of Grain Crops (All Categories of Farms)

	Food grain		Feed grain		Groats		Total	
Five-year plan (annual average)	mln tons	%	mln tons	%	mln tons	%	mln tons	%
1961-1965	79.3	61	46.9	36	3.78	3	130	100.0
1966-1970	103.0	61	59.2	35	5.1	3	167.6	100.0
1971-1975	100.4	55	75.6	42	5.2	3	181.6	100.0
1976-1980	110.6	54	88.8	43	5.4	3	205.0	100.0
1981-1985	92.2	51	81.6	45	5.9	3	180.3	100.0
1986-1987	104.5	50	98.9	47	7.0	3	210.4	100.0

Within the structure of feed-grain production an important place can be occupied by corn, which possesses high biological potential in comparison with other crops, as well as good feed qualities. With the introduction of new

species and hybrids of seed corn, it seems possible to move this crop northward and to thus increase the total production of corn to 25 million tons a year.

In the United States there is a predominance of grain production for animal feed—76 percent of all grain production during the years 1981-1985, while for food it was only 23.2 percent. In the USSR this ratio was 45 and 51 percent respectively. In the United States the principal feed crop is corn; its total harvest in 1986 was 209.6 million tons (66.3 percent of all grain production), whereas in the USSR it was only 12.5 million tons.

One of the important factors in the growth of yield and the increase of total grain harvests is the chemicalization of agriculture. In those of the world's countries which have intensive agriculture 1 kg d.v. [active matter] of mineral fertilizers yields an additional 10 kg of grain. A high yield of grain crops in these countries has become possible thanks to the introduction of high norms of mineral fertilizers—300-400 kg d. v. per hectare of arable land. In tandem with other factors (land reclamation, productive species), the use of fertilizers allows the obtaining of 59.8, 65.7, and 78.1 quintals of grain per hectare (figures from France, Great Britain, and the Netherlands respectively, 1984). Furthermore, mineral fertilizers, for the most part, made from nitrogen, exert a beneficial influence on grain quality. At the present time at least ⅓ of agricultural produce in the Western European countries and the United States is obtained by means of mineral fertilizers.

In the USSR, where the natural climate conditions are characterized by unfavorable factors, where a significant portion of the arable lands is marked by a low content of nuritive elements, especially phosphorus, where enormous areas of lands suitable for agricculture experience insufficient moisture, the effect of mineral fertilizers on the yield of grain crops is considerably lower. Out of 228 million hectares of arable lands in this country, only 100 million hectares are accounted for by regions where the effectiveness of using mineral fertilizers is relatively stable, regardless of the evolving weather conditions.

According to data of the TsINAO [Central Institute for Agro-Chemical Service to Agriculture], approximately ⅓ of the arable lands have a low phosphorus content, the area of the plowed fields subject to liming comprise 51 million hectares; the humus content in arable lands is 3.61 percent, and the plowed area with a low humus content is less than 2 percent, which comprises 23 percent of the area investigated.

The application of mineral fertilizers under grain crops, despite unfavorable natural-climatic conditions, ensures a certain increase in the yield. Thus, whereas in 1966-1970 (on an annual average) 22 kg d. v. of fertilizers were introduced per hectare of sown areas, and the yield of grain crops amounted to 13.7 quintals per hectare, in 1976-1980, with the application of 51 kg, the yield was 16 quintals per hectare. During the years 1986-1988 the norm of applying mineral fertilizers rose to 72 kg of nutritive subatances (an increase relative to the 1966-1970 level by a factor of 3.3); however, the increase of grain crops rose by only 30 percent, i.e., the growth rate in the yield of grain crops lagged significantly behind the growth rate of applying fertilizers.

By the year 2000 deliveries of mineral fertilizers to agriculture will reach 45.3 million tons d.v. When calculated per hectare of plowed fields, this will amount to 202 kg, which is 7 times the amount of the 1965 level. An increase in the deliveries of mineral fertilizers requires an increase in the overall standards of agriculture, an observance of technological discipline on the land, the organization of protecting plants from pests, diseases, and weeds, strengthening the material-technical base, and converting to the methods of economic management. It is only by a comprehensive solution of the problem of increasing the land's fertility that we can ensure the necessary increase in the yield of grain crops.

Further increase in the effectiveness of utilizing mineral fertilizers is possible only in the event of solving a number of problems. In the first place, we must eliminate considerable losses of mineral fertilizers during their storage. In the second place, we must see to it that the mineral fertilizers being delivered to agriculture have a high content of nutritive substances. In the third place, we must create the appropriate conditions under which a high economic effect will appear from the fertilizers being used (the presence of moisture in the soil, soil acidity and salinity, as well as the optimal humus content). In the fourth place, we need a differentiated approach to the use of fertilizers, depending upon the characteristics of the crop being raised and the specific-natural conditions. In the fifth place, on each farm we must determine to what extent the mineral fertilizers being introduced will increase the yield of the crops, facilitate the lowering of production costs of the food, fodder, and groat-type grains, and ensure a rise in the net income.

All this will require an improvement in the activity of the agro-chemical service; agronomists must have the data of agro-chemical evaluation of the soil in order to effectively influence the formation of harvests in the various periods of the cultivated plants' vegetation.

Grain production in our country is carried out on an enormous territory with diverse soil and climate conditions. The country's most important grain regions, first and foremost the Volga Region, Western Siberia, the steppe zone of the Ukraine and the North Caucasus, the virgin soil oblats of Kazakhstan, where more than 50 percent of all the sowings of grain crops are concentrated, are periodically subjected to droughts. This leads to considerable variations in the total grain harvests (ranging from 38.9 million tons during the years of the 8th Five-Year Plan to 82.4 million tons in the 9th Five-Year Plan). As a result, the country was at times compelled to buy large amounts of grain on the world market, which is an abnormal phenomenon for our land-rich power.

Particularly sharp "jumps" in the yields and total grain harvests are to be observed in the regions of the Southeast, where the major suppliers of commercial grain are situated. Thus, in the Volga Region during the years 1976-1980 the productivity of the grain sector varied from year to year, ranging from 8.8 to 19 quintals per hectare, and in 1981-1985—from 7.7 to 16 quintals per hectare; the tendency of reducing the land's productivity began to manifest itself. Whereas the average annual yield of grain crops here during the years 1976-1980 amounted to 13.6 quintals per hectare, in 1981-1985 it went down to 12 quintals per hectare; in Saratov Oblast—from 12.2 to 10.6 quintals per hectare, and in Volgograd Oblast—from 13.6 to 9.9 quintals per hectare. During the period being analyzed in the Volga Region the total grain harvests decreased from 21.9 million tons during the years 1976-1980 to 17.3 million tons in 1981-1985 (on an annual average).

All this was reflected negatively in the economic indicators: labor productivity declined, and there was an increase in the production costs per quintal of grain. Thus, on the kolkhozes of the Volga Region the production cost of 1 quintal of grain on an average for the years 1981-1985 rose by 30 percent as compared to the years 1976-1980, in Saratov Oblast they went up by 17 percent, while in Volgograd Oblast the corresponding rise was 40 percent. The profitability of production, despite a certain rise in the price of grain, declined.

Creation of stable grain production in a zone of unstable moisture requires a comprehensive implementation of the factors of intensification. Moreover, it is extremely important in the drought-prone zones to adopt scientifically grounded recommendations aimed at increasing the land's fertility. At this level a great deal of importance should be accorded to improving the structure of arable lands, and to conducting land-reclamation measures.

The location of grain crops alongside good predecessors is a major reserve for increasing land productivity and ensuring a stable grain production. A special place belongs to good fallow fields. When raising winter grain crops by means of fallow fields, provision is made for a good assmiliation of the autumn-winter and spring-summer precipitations, which to a definite degree, guarantee the obtaining of good harvests in dry years. Therefore, increasing the area of purely fallow fields to the optimal size is the most effective measure in creating a highly productive and stable grain-producing farm. In Volgograd Oblast the yield of winter grain crops by using fallow fields in dry years is higher by a factor of 1.8-2 than by using non-fallow lands in succession.

Irrigating the fields is likewise an important factor. During the years 1981-1985 the country on the average witnessed the irrigation of merely 7.3 million hectares sown in grain crops; the total grain harvest from irrigated lands amounted to only 12 million tons, or approximately 7 percent of the total grain production.

Our country has created large reservoirs and powerful hydroelectric power stations, which serve as a base for the extensive development of irrigation. Their correct utilization will allow us to expand the areas sown in grain crops on irrigated lands and to significantly increase the stability of a grain farm. We must step up scientific research studies on increasing the economic effectiveness of grain production on irrigated lands and create an integrated theory of the stability of the grain sector. In Canada, for example, where the natural-climate conditions closely resemble the principal grain-producing regions of our country, based on the introduction of drought-resistant species, the introduction of fallow fields, and the development of a common agricultural crop, stable grain harvests are obtained (Table 5).

Table 5. Productivity and Stability of Canadian Grain Sector[1]

Indicator	1976	1977	1978	1979	1980	1976-80 avg	1981	1982	1983	1984	1985	1981-85 avg
Yield of all grain crops, quintals/hectare	22.8	22.7	22.5	20.6	21.7	22.6	13.5	25.2	22.1	20.3	22.1	22.7
Total grain harvest, mln tons	44.7	42.2	41.5	36.4	41.5	41.3	50.8	54.2	47.5	42.2	48.6	48.9
Wheat yield, quintals/hectare	21.0	19.6	20.0	17.0	17.4	19.0	20.0	21.9	19.3	16.1	17.5	19.0
Total wheat harvest, mln tons	23.6	19.9	21.1	17.7	19.3	20.3	24.8	27.6	26.5	21.2	23.9	24.8
Yield, quintals/hectare:												
barley	24.1	24.8	24.4	22.7	24.6	24.1	25.1	27.2	23.6	22.6	25.8	24.9
oats	20.0	20.2	19.2	19.3	19.2	19.6	20.4	22.8	19.8	19.0	21.2	20.6
corn	53.2	58.0	51.6	55.8	60.0	55.7	58.8	57.4	55.2	58.9	61.8	58.4

1. According to data of the national statistics.

A special role is played by intensive technologies in increasing the yield and in increasing the total grain harvests. In 1986 the yield of winter crops in the country over an area of 12 million hectares amounted to 32.0 quintals per hectare, spring wheat over an area of 11.4 million hectares amounted to 17.9 quintals per hectare. A record harvest was grown in Krasnodar Kray: from an area of 1.3 million hectares, winter wheat grain was harvested in the amount of 45.5 quintals per hectare, or 10 quintals more than under the old technology. An additional amount of 1.2 million tons of vigorous, valuable wheat was obtained. The profit derived from selling this high-quality grain amounted to 50 million rubles. In Stavropol Kray on an area of 900,000 hectares, from each hectare 31 quintals of winter wheat grain was harvested; it is grown by using intensive technology; an additional 850,000 tons of high-quality grain was harvested.

The extensive use of intensive technologies makes it possible for us to increase the total grain harvests and to impart a stable quality to grain farming. The experience gained by the farms in Rostov Oblast is of interest. Grain crops grown in accordance with intensive technology on this oblast's kolkhozes and sovkhozes in 1988 were situated over an area of 1,236,00 hectares. Because of this, an additional 1,260,000 tons of grain were obtained, amounting to 195,000 tons more than in 1986. Intensive technologies, in tandem with organizational-economic factors have allowed them not only to increase the total grain harvests but also to increase its quality. In 1988, 2.1 million tons were procured, which is 638,000 tons more than in 1986, including 1.6 million tons of valuable grain, or 804,000 tons more. Some 539,000 tons of vigorous wheat was sold to the state.

In the Don Region the principal grain crop is winter wheat; a considerable portion of it is sown on fallow fields. In 1988, their area amounted to 850,000 hectares. Winter grain crops are situated on fertile soils, and this is provided by means of applying organic and mineral fertilizers, designed for a planned yield, taking into account the agrochemical characteristics of specific fields. In 1988, some 81 kg of mineral fertilizers (in d. v.) were applied per hectare of areas sown in grain crops.

What is grown here principally in Don is frost-free winter wheat. This species is characterized by a comparatively high drought-resistance and frost-resistance, as well as resistance to being beaten down; it has good baking features and provides a high-quality grain. Only top-grade seeds are used in sowing.

For each kolkhoz and sovkhoz of Rostov Oblast a system of agriculture and land arrangement has been worked out, constituting a complex of scientifically grounded measures; their implementation makes it possible to significantly increase the fertility of the arable lands, to increase grain production and enhance its quality. Whereas prior to the adoption of intensive technology (1981-1985) the average annual yield of grain crops on the farms of Rostov Oblast amounted to 16.8 quintals per hectare, with a total grain harvest of 5,327,000 tons, during the years 1986-1988 the corresponding figures were 20.2 quintals per hectare and 6,348,000 tons. And in Zernogradskiy Rayon the average yield of grain crops in 1988 amounted to 31 quintals per hectare; on the Kolkhoz imeni Lenin, with an area of 10,000 hectares, this figure is 35,4 quintals per hectare. Under the conditions of the dry climate prevailing in the Salskiy Steppes, these are relatively high indicators. The yield of seed corn on this farm amounted to 58 quintals per hectare.

The introduction of intensive technology in agriculture has compelled us to change our attitude with regard to the training of personnel. We must train specialists in a broad range of fields; they must have a good grasp of the fundamental methods and skills of increasing soil fertility, as well as the oprimal utilization of labor and technical resources. Tractor-operators must not only know their equipment perfectly but also have a good idea of the organization and technolgy of production, have specific knowledge of plant biology; this will allow them to create the optimal conditions for the growth and development of crops for the purpose of obtaining high yields with the least possible losses of labor and means.

Intensive technologies require the creation of new, highly productive machinery, light in weight, reliable, and simple to operate, with normal conditions for the work of machine operators and mechanics. Unfortunately, most of the machinery being used in grain-type farming does not measure up to these requirements. Many of them were created separately, without taking into account the improvements of comprehensive mechanization and their conversion to intensive technologies.

An important role belongs to protecting plants from pests and diseases. The losses caused by the activity of harmful organisms are still extremely significant. An abnormal situation has evolved whereby the areas sown in grain crops, on an average and to a large degree, are covered with weeds on an area of 65 percent. Approximately 50 percent of the applied fertilizers is infested with weeds. To this day the need on the part of grain farming for funds with which to wage an active struggle against pests is not being fully satisfied, as a result of which, exterminating measures are not being carried out to the degree necessary. Of particular importance in connection with this is working out a system for combatting harmful organisms and this presupposes the availability and presence of skilled personnel engaging in the protection of plants, as well as up-to-date machines and mechanisms.

The high degree of effectiveness in grain production using intensive technologies depends, to a large extent, on the level of introducing economic management methods: cost accounting, cost recovery, and the self-financing of production. An agricultural enterprise operating on the principles of cost accounting and self-financing must cover its production expenditures by monetary revenues from selling its output and obtaining

the necessary profits for expanding production, creating material-incentives funds, and solving social problems.

The achievement of a high level of profitability in production is unthinkable without economizing on labor, reducing social production outlays, using a mechanism for cutting down on expenses whereby the magnitudes of material incentives depend not only on the quantity and quality of the product but also on its production cost. Awarding bonuses to employees for economizing on resources and deducting for an overexpenditure of seeds, fertilizers, fuel, and spare parts will facilitate the reduction of outlays in grain farming.

The introducion of cost accounting and the collective contract in grain production will facilitate the growth of labor productivity and the reduction of production costs.

Serving as an example of this can be the Kolkhoz imeni Kirov of Rostov Oblast. During the years 1986-1988, in comparison with 1980-1982, the average annual yield of winter wheat—the principal grain crop raised on this farm—increased by 47.1 percent, and labor productivity doubled. In 1988 on an area of 2700 hectares here they obtained 40 quintals of winter wheat from each hectare. The average yield for farms of Rostov Oblast amounted to 20.4 quintals per hectare.

It is extremely important that under the conditions of a dry climate, based on the introduction of economic management methods and the application of intensive technology for growing grain crops on the kolkhoz, a steady development of the grain sector be achieved. The average annual yield of winter wheat during the years 1986-1988 amounted to 43.1 quintals per hectare without any abrupt variations year by year. Thus, in 1986 the winter wheat harvest was 44.3 quintals per hectare, in 1987 it was 45.0 quintals per hectare, and in 1988—40 quintals per hectare. Despite the caprices of the weather, they harvest high, stable yields of winter wheat on the Kolkhoz imeni Kirov. In achieving high indicators, it was decisively important to make the conversion to a collective contract, to strictly observe the agro-technical and organizational-economic measures, to introduce new species, and to apply increased amounts of fertilizers.

Among the contractual forms, an important place is occupied by the leasing contract. Its essence consists of the fact that the labor collective leases the necessary means of production, produces the products, and sells them at set prices. Between the labor collective and the administration a contract is concluded which describes the obligations and responsibilities of the parties involved. The wage fund is formed as the difference between the monetary receipts for the products sold at the designated prices and the expenditures involved in producing them. Under the leasing contract the greatest possible independence of the labor collectives and enterprise are achieved, and this serves as a powerful factor for increasing production efficiency.

The conversion of enterprises to cost accounting and self-financing presupposes the strengthening of kolkhozes and sovkhozes by skilled staffs of supervisors and specialists who would have knowledge in the area of administration at their disposal, who could be capable of working with people, constantly manifest their concern for human beings, who would introduce everything new and progressive, who would be competent in matters of equipment and technology, as well as production and labor organization.

An important role must be played by species in increasing the yield of grain crops and increasing the total grain harvests.

The Soviet Union has witnessed the creation of highly productive species of winter wheat, among which the breeding masterpiece of the 20th century is the species entitled Bezostaya [Frost-Resistant] 1, which was developed by Academician P.P. Lukyanenko. This species has a high productivity, resistance to being beaten down and to diseases, and is responsive to a high degree of soil preparation. Introduction of this species in a number of the country's regions has made it possible to double the yield.

With regard to grain quality and baking capability, it is one of the best. Dr. Kent Jones, a consultant to British millers, after testing the Bezostaya 1 wheat in his laboratory, gave it the following appraisal: "This was a truly strong wheat, capable of improving a weaker wheat in a baking mix." In comparison with other species, the Bezostaya 1 species has the highest yield.

The Scientific Research Institute for Agriculture in the Southeast has created top-grade species of strong spring wheats of the Saratov breed. Particularly valuable among them is Saratovskaya 29, developed by Hero of Socialist Labor V.N. Mamontova. It is resistant to shattering, to being beaten down, is not harmed by dusty heads, and responds well to fertilizers.

During the years of the 11th Five-Year Plan, the breeders created and submitted for state testing 142 varieties of winter wheat, including 11 strong ones, as well as 111 new varieties of spring wheat. Zoning was done for 49 varieties, including 14 varieties of strong and 4 varieties of durum spring wheat. For cultivation in accordance with intensive technology, the following are recommended: highly productive varieties in Kurgansk and Orenburg oblasts—Kurganskaya 1, Vera, Almaz; in Altay Kray—Altayka, Omskaya, and Tselinnaya 21.

They have developed the world's best variety of winter rye: Chulpan, the yield of which can reach an amount of 70 quintals per hectare. The plants of this variety have short stalks which resist being beaten down. This variety measures up to the requirements of intensive technology. Its wide dissemination when the necessary conditions are created has allowed us to significantly increase the total production of winter rye—an extremely valuable food crop. Since 1988 the BSSR has witnessed the zoning of an intensive variety of winter rye entitled Verasen, a

breed developed by the Belorussian NII [Scientific Research Institute] of Agriculture. This variety can provide a grain yield of more than 75 quintals per hectare.

In 1988 Rostov Oblast zoned a variety of winter barley known as Siluet; its yield on the farms of Kirovograd and Dnepropetrovsk oblasts has reached a level of 70.4 quintals per hectare. At the Krasnodar NII imeni P.P. Lukyanenko they have developed a variety of winter barley known as Radikal; it is intended to be grown using intensive technology. This variety has been zoned since 1988 in the northern and central zones of Krasnodar Kray. When tested under the conditions of Chernigov Oblast, the yield of this variety amounted to approximately 80 quintals per hectare.

Thus, Soviet breeding has achieved solid successes in creating valuable varieties of winter and spring wheat, rye, and barley. But Soviet scientists must accomplish still more in the area of breeding grain crops.

Grain-crop varieties respond differently to fertilization. Therefore, the development of varieties which possess the capability of responding well to the application of organic and mineral fertilizers constitutes an important trend in breeding.

Of particular importance is the breeding of drought-resistant varieties; because of the frequently recurring droughts in our country, sharp variations in the total grain harvests are to be observed. Creating varieties of grain crops which are resistant to early and late droughts, along with elevating the standards of agriculture, allow us to ensure the steady development of grain farming.

Breeding winter wheat for frost-resistance envisions the development of those forms which would resist low temperatures, as well as the actions of ice crust and soaking. The problem of advancing winter wheat as the highest-yielding and most valuable crop to the north is far from being solved, since every year a significant portion of its sowings perish. We must seek to create winter-resistant varieties which are suitably adaptable to various zones of the country.

Agriculturalists expect from the plant breeders new, more productive varieties of corn, which will allow them to increase the production of feed grain; the latter is extremely necessary in order to solve the problem of producing milk and especially meat.

Solving the problem of increasing the yield and increasing the total grain harvests makes it necessary to improve the "Zerno" [Grain] system, according it high priority, appropriate material and technical means, and up-to-date scientific support.

Unfortunately, our country lacks a pilot-type scientific institution which would comprehensively solve the problem of developing the grain sub-complex. The All-Union Grain NII under the USSR Ministry of Grain Products concerns itself only with the problems of storing and processing grain products. In order to impart a systemic characteristic to the scientific research studies, it would be feasible to create at this institute's base a scientific institution which would comprehensively solve the problems involved with increasing the production of valuable grain species—durum and strong wheat, millet, buckwheat, as well as high-protein food and animal-feed crops. At the same time, we must inaugurate research studies in the sphere of standardization and equipment, of the organization and economics of grain production.

Such a restructuring will allow us to place scientific research in our country onto the level of present-day demands, to improve their methodological support, and to concentrate skilled scientific staff members. It will also facilitate the creation of highly effective, stable grain farming.

Article submitted on 12 January 1989.

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GOODS PRODUCTION, DISTRIBUTION

Hard Currency Store Opens in Vilnius

18200472 Vilnius SOVETSKAYA LITVA in Russian 7 Sep 89 p 3

[ELTA dispatch: "Hard Currency for the Republic"]

[Text] The "Ruta" store on Konarske Street in Vilnius has become the first hard currency trade enterprise to be transferred to republic authority. A sizeable share of its income, 70 percent, will remain in Lithuania, as opposed to 10 percent for other stores.

"We're working on cost-accounting principles," says store Manager Leonid Pobedonostsev. "We can conclude contracts with foreign wholesale and retail firms and with individual producers without going through intermediaries. We have a broad selection of clothing and knitwear, shoes, perfumes and cosmetics, various food stuffs, dishes, souvenirs, household appliances, automobiles and auto parts. We receive these goods from all over the Soviet Union and from various foreign countries. For example, at the present time we have acquired goods through such well-known firms in the FRG as 'Otto,' 'Schwab,' and 'Quelle.'"

"Ruta" serves customers who have hard currency. It's also possible to pay with credit cards from nine world banks.

Suvorov on DOSAAF Economic Operations, Consumer Goods Output

18011012 Moscow SOVETSKIY PATRIOT in Russian 3 Sep 89 p 2

[Report on interview with Deputy Chairman of the Central Committee of the All-Union Voluntary Society for Assistance to the Army, Air Force, and Navy, Major General Vasiliy Vasilyevich Suvorov, by SOVETSKIY PATRIOT commentator Yu. Grachev: "Potential For the Development of the Material Base is Far From Exhausted"]

[Text]

[Grachev] Vasiliy Vasilyevich, the Administration of Capital Construction and Material-Technical Supply of the USSR DOSAAF [All-Union Voluntary Society for Assistance to the Army, Air Force, and Navy] Central Committee handles many issues. Would you object if our conversation were to begin with the productive sphere?

[Suvorov] From the beginning of this year, production enterprises and design and technology offices of the DOSAAF switched to complete economic accountability and self-financing. Now we have an opportunity to review the results of the first half-year. Technical and economic indicators have improved, the output of specialized products has increased, and labor productivity is higher. The quality of modern technical instruction aids for schools and clubs of our defense society is higher. For example, we have succeeded in completing the development and beginning the production of simulator-examination consoles. Training organizations need these electronic devices badly.

The number of graduates of programming classes increased by 20 percent. We are trying to meet the demand for prestigious products which include racing cars, go-carts, and buggies. The plan for producing them has been overfulfilled. The output of radio stations increased by 20 percent.

[Grachev] Do the products of DOSAAF enterprises draw complaints?

[Suvorov] Unfortunately, thus far there have been complaints. Some of our products still do not comply with the standards accepted. This is frequently due to the absence of necessary raw materials, companion parts, and products.

There was a serious exchange concerning this at the government level. Chairman of the USSR DOSAAF Central Committee Nikolay Nikiforovich Kotlovtsev recently spoke at the presidium of the USSR Council of Ministers. As a people's deputy of the USSR, he stressed the need to eliminate the residual principle in allocating supplies to the defense society.

Our complaints were received with understanding in the government. Support from the USSR Gossnab [State Committee for Material and Technical Supply] and a number of ministries and offices were promised, and it has begun to materialize. Nonetheless, the hindering factor is still perceptible. Our enterprises would have a much greater opportunity with regard to both the volume of output manufactured, and the variety of assortment and quality improvement if they had good-quality raw materials and subcontracted materials.

At the same time, a number of athletic technology products compete successfully with their foreign analogs. For example, the International Carting Federation has issued a certificate for the racing car ShKS-87 produced by the "Patriot" Production Association in Leningrad. The prototype has been registered by the International Carting Organization.

The OV (350) class scooter developed as a completely new design with complete aerodynamic stabilization has been manufactured. The racing vessel has no analogs. Its speed performance exceeds world standards.

There have been certain accomplishments in improving the quality and competitiveness of custom-designed products. This has been achieved due to the implementation of modern synthetic materials in designs. We have taken a perceptible step forward in the field of improving motor vehicle simulators. The Kharkov Design and Technology Office of the "Kontur" Production Association is involved in applying microprocessor technology in the motor vehicle simulators of the AT-II series which will allow us to enhance their training potential, quality,

and reliability. In the future, we expect to develop computerized motor vehicle simulators using TV equipment in the capacity of modeling devices. With a view to enhancing the quality of radio stations produced, we are working on improving their main characteristics. The development of equipment for package communications which is new in principle, has begun.

[Grachev] Prospects for the development of manufacturing and output of new products are hopeful. Could this be attributed to the fact that production enterprises have been given economic independence and that managing them has been decentralized?

[Suvorov] Yes, certainly. Out of 36 production enterprises, only nine report to the center. We are planning further restructuring of their operations, streamlining of economic accountability, and decentralization of management. The USSR DOSAAF Central Committee carries out a unified technical policy with regard to all enterprises, performs the functions of a methodological organ, develops and introduces materials on standards, and streamlines specialization and cooperation among DOSAAF enterprises.

We are sometimes rebuked for decentralizing only small production enterprises while leaving the largest ones under our control. However, this is not so. The largest production associations operate within the framework of the Ukraine DOSAAF Central Committee and Armenia DOSAAF Central Committee. I mean primarily the production association "Dnepr" with an annual volume of production of 17 million rubles. As I see it, Chairman of the Ukrainian SSR [Soviet Socialist Republic] DOSAAF Central Committee Boris Ignatyevich Kharchuk need not have complained in an interview to SOVETSKIY PATRIOT about us supposedly appropriating a large segment of profits from the Ukrainian enterprises of the defense society.

At the same time, the USSR DOSAAF Central Committee expresses its concern with the future status of DOSAAF enterprises in the event of their possible transfer to the republics or local soviets. Such a transfer, if it were to take place, would set back [accomplishing] the tasks of reinforcing the material facilities of the defense society in a serious manner; the loss will be hard to recoup.

[Grachev] Tell us please about the main reasons for delays in capital construction. How many facilities under endless construction do you intend to mothball? What will be the loss due to this?

[Suvorov] Poor work by contractor organizations is the main reason for the arrears in fulfilling capital construction plans. Regardless of the low availability of machinery and labor, they strive to ensure more contracts. This is a well-known gambit. Construction organizations wish to secure spare funds in order to later maneuver them as they see fit. DOSAAF facilities, as a rule, suffer due to such arbitrariness because they are classified as "others," that is, those which do not enjoy a priority status.

Local committees of the society organize construction with their own resources. With the help of local party and soviet organs they find untapped potential, make use of it, and secure favorable results. For example, the DOSAAF Central Committees of Lithuania and Moldavia, and the Bashkir, Mari, Moscow, Sakhalin, and Kaliningrad oblast committees of the defense society have on the whole fulfilled construction assignments. They are situated in different regions. This means that the economic industriousness of committee leaders influences the final result rather than regional peculiarities.

Thus far, we cannot say the same about the DOSAAF Central Committees of the Ukrainian SSR and Azerbaijan SSR, Bryansk and Kuybyshev oblast committees of the society. They used to always be among the best, but now they have fallen behind.

Construction in aviation organization gives us cause for much concern. Leaders of the Kaluga, Atkarsk, Kostroma, Buzuluk, Novosibirsk, and Ryazan aviation clubs are not showing proper concern for developing construction on the basis of their own resources. Leaders of these oblast committees of the DOSAAF are not active either.

As far as the mothballing of facilities under endless construction and the losses associated with it are concerned the question has been put incorrectly. It is not the mothballing of facilities but exactly drawn-out construction itself that is the main culprit in the losses inflicted. In 1987, we mothballed 12 facilities, but then in 1988 we managed to marshal the necessary resources and means to them, and a large share of them were commissioned.

[Grachev] In the course of the pre-election campaign, you and Deputy Minister of Defense N.V. Chekov who has now been elected a people's deputy from the defense society visited many lagging construction projects of the DOSAAF. Much time has passed since. Have there been any changes?

[Suvorov] We visited construction sites of the athletic complex "Dolphin," of the Zaporozhye imeni A.I. Pokryshkin Flight School of DOSAAF Pilots, and the Barki airfield of the Moscow Aviation Club. I may say unambiguously that at the facilities we have been able to see perceptible progress has been made.

To be sure, in the first half of the year the standard percentage of plan fulfillment was not ensured. However, in comparison with the same period of last year, 10 percent more funds have been utilized. This indicator could be substantially higher yet if military construction personnel in the field were not held back by the lack of materials and machinery, and on occasion by the lack of administrative skills and indifference on the part of committee leaders in the matter of equipment delivery,

provision of financing for the construction projects, and performance of other duties of a construction customer.

Taking into account the fact that DOSAAF construction projects are not facilities covered by the state order, the USSR Ministry of Defense accommodated us. Beginning in 1989, the construction sites which we very much need were put on the register of the control and dispatching facility which puts them on the same footing as state-order sites.

[Grachev] What is the status of housing construction for the employees of the defense society?

[Suvorov] In recent years, we have increased capital investment for matching participation in housing construction by a factor of more than 2.5. Taking into account the funds transferred for the development of the communal infrastructure and facilities of the construction industry, the volume of matching participation in housing construction amounts to more than 20 percent of the total capital investement set for the defense society. In addition to this, individual DOSAAF committees and organizations carry out the construction of residential buildings with their own resources and on a contractual basis. The overall volume of housing received and commissioned in 1989 and 1990 will amount to up to 500 apartments a year. If this amount of annual allocation of apartments is kept up in the 13th and 14th 5-year plans, we consider it possible to meet by the year 2000 the need for living space of the employees of the society who do not have their own space or require an improvement in their accommodations.

However, we should not think that this is not much of a problem. At present, 2,553 families have no apartments, and 1,716 families need to improve their accommodations.

These people who are not properly settled frequently encounter indifference to their needs. People have complained about incorrect actions by the chairmen of the Orenburg (R. Dulkin), Tambov (V. Tolokonnikov), and Chechen-Ingush (V. Lunkov) oblast committees of the DOSAAF in which justice is not done.

[Grachev] Concern for improving the conditions of work and life and elimination of the incidence of work-related injuries is one of the avenues of social transformations. What can you say about the status of occupational safety at the enterprises of the defense society?

[Suvorov] In recent years, the USSR DOSAAF Central Committee has created a branch base of occupational safety standards having spent 693,600 rubles for this purpose last years.

However, the status of occupational safety at the enterprises and in the organizations of the DOSAAF remains unfavorable.

A continuous increase in the incidence of production-related fatalities is the cause for special concern. In 1988, traffic and motor-vehicle accidents accounted for 54.4 percent of the overall number of fatalities, aviation accidents for 27.2 percent, and other causes for 18.3 percent.

The incidence of injuries is the highest in the organizations and at the enterprises of the DOSAAF of the Ukrainian SSR, Uzbek SSR, Kazakh SSR, Kabarda-Balkar ASSR [Autonomous Soviet Socialist Republic], Maritime Kray, Sverdlovsk, Tyumen, Volgograd, and Ulyanovsk Oblasts.

The jump in the incidence of work-related injuries and fatalities was facilitated by the atmosphere of secrecy surrounding these facts. It was not the custom to discuss this; everything was shrouded in "secrecy."

The status of working conditions at many enterprises and in the organizations of the society cannot but concern us. In many cases, city and rayon committees, schools, plants, and especially athletic and technical DOSAAF clubs occupy old, dilapidated premises and basements. Some of the managers of organizations and trade union committees do not take measures in order to create healthy and safe working conditions.

[Grachev] Vasiliy Vasilyevich, would you please tell us about the contribution of DOSAAF enterprises to producing consumer goods?

[Suvorov] On the whole, production of consumer goods accounts for 30 to 35 percent at the manufacturing enterprises of the defense society.

According to the classification, car simulators, sports and racing cars, go-carts, "buggies," sports vessels, sets of ship and plane models for the technical development of children, internal combustion microengines, and so on are considered to be consumer goods. These products in their entirety are also classified as specialized products of the defense society; as a rule, they are earmarked for our own consumption. The goods are distributed directly at the committees and organizations of the DOSAAF and in part are sold to the populace through retail outlets.

Finally, our collectives resolve a large set of issues in providing material and technical support for DOSAAF committees, organizations, and manufacturing enterprises. However, there are so many problems with supplies now that a separate consideration of this topic is desirable. In particular, issues of rational and thrifty use of material resources are going to be considered specifically by the Presidium of the USSR DOSAAF Central Committee in October.

Conversion: Lvov Association Increases Consumer Output

18011003 Vilnius SOVETSKAYA LITVA in Russian 13 Aug 89 p 1

[TASS: "From All Corners of the Country"]

[Excerpt] Lvov. Various household devices, together with military equipment will be produced in a new building which is being put up at the Lvov Association

imeni 50th Anniversary of the October Revolution. The "defense workers" made peaceful goods before as well, but their percentage in the total volume of production was insignificant. Now it is planned to increase the output and assortment of consumer goods.

'Molniya' Plant Producing Dairy Industry Equipment

90UM0045A Moscow KRASNAYA ZVEZDA in Russian 13 Oct 89 First Edition p 4

[Unattributed report: "Another Plant Specialty"]

[Text] Until recently the Moscow Molniya machine building plant has produced mainly defense products. But beginning this year along with two other enterprises—one in Plavsk and the other in Makhachkala—it is becoming a production association which is assigned the production of modern industrial separators for enterprises that process milk and produce dairy products.

The general director, N. Mironov, a USSR people's deputy, explained: "The main purpose of the creation of the new Molniya Mashinostroitelnyy Zavod association is to take advantage of the potential of the defense industry enterprise in plants that produce purely peacetime products. Agriculture is very much in need of these separators. And not only for dairies but also for enterprises that manufacture medicines. Experimental models will be put into production as early as this year."

Conversion of Space Program Shops to Civilian Production

18010896a Moscow SOVETSKAYA ROSSIYA in Russian 14 Sep 89 Second Edition p 1

[Article by A. Filippov, TASS correspondent: "They Make 'Protons' Here"]

[Text] Up until quite recently, associates of this enterprise, from the director on down to the worker, were not allowed to talk about their plant even to their family. We joked: We make bicycles. And, indeed, one of the shops here makes the "Druzhok" children's bicycle, the best in the country and one of the top-rated in the world (Japan alone has placed an order for 50,000). But the journalists who for the first time were invited to the Moscow Machine Building Plant imeni M.V. Khrunichev the other day were shown altogether different shops. Representatives of the mass media were able to become thoroughly familiar with the country's declassified space shipyard, whose main products are orbital stations, spacecraft modules, and the famous "Proton" booster rockets.

"Today, the plant is no longer a defense plant," noted its director, A. Kiselev. "Industrial ozonizers occupy an important place among our products intended for the national economy; they will be installed in waste water treatment plants in enterprises. The capacity of the ozonizers is sufficient for ecological cleanup of polluted areas today. Recently, part of our facilities switched to manufacturing gas-cylinder devices for automobile engines under an Italian license. Their high degree of airtightness is the main requirement for introduction of this promising type of transportation. Our wealth of experience in working with similar components in spacecraft will enable us to achieve high quality.

"At the same time, production of our main product—modules for the Mir orbital complex—continues in the peacetime stocks."

Conversion: Diversification at Transbaykal Tank Repair Plant

18010896b Moscow KRASNAYA ZVEZDA in Russian 17 Sep 89 First Edition p 2

[Unattributed article: "Diesels and Skewers"]

[Text] **Many understand and have grown used to the word "conversion," signifying the shift of part of the defense industry to producing peacetime products. They more rarely talk about diversification, although military enterprises have for a long time been producing diverse and, as a rule, high-quality consumer goods in addition to the main defense products. Now, the scale of diversification is to increase considerably.**

How is this task being accomplished at a specific enterprise? It was namely this question that brought the participants in the "Krasnaya Zvezda-90" expedition to a tank repair plant located in the Transbaykal Military District.

"Just don't criticize the shashlik skewers," said the plant's chief engineer, Lt Col V. Shimanskiy, smiling as he said goodbye. "This is a product that is needed and in short supply, and they are bought up instantly. Cooperators pester us with a proposal to take them at wholesale..."

We are not criticizing them; on the contrary, we are striving to show the range of the search by the plant's designers and manufacturing engineers at an enterprise that repairs or writes off tanks and infantry fighting vehicles and at the same time manufactures sheds, metal garages, gates for brick garages, camping tents, automobile covers, hothouse equipment, components for wooden and metal fences, ironing boards, and various industrial rubber components... It is all in demand. True, the trade and purchasing bases accept the products for sale without any special desire: It turns out that they are inexpensive. The plant cannot artificially overstate the prices. Here the labor productivity is so much higher than in any other handicraft workshop.

The volume of production of consumer goods this year will be 350,000 rubles; next year's plan is 800,000. Is this high or low for such an enterprise? The plant workers believe it is low.

Despite the fact that current revenues primarily come not from selling ironing boards and skewers; consumer goods also include tanks and infantry fighting vehicles that are repaired and re-equipped as prime movers, bulldozers, and all-terrain vehicles and delivered to geologists, gold miners, railroad workers, kolkhozes, and sovkhozes. From three worn-out vehicles they manage to assemble one that is still quite suitable for extended operation.

On an infantry fighting vehicle, for example, they cut off the roof, a canopy is attached, and, as a result, geologist receive reliable transportation for off-road travel. Kolkhoz managers ask them to keep the turrets on the tanks for the weight; it turns out to be an excellent silage packer. And if engineer equipment is hung on the armor, it is a good bulldozer.

The plant also repairs K-750 and MV-750 motorcycles already removed from service, but there is practically no profit from this. It turned out that the cost of the spare parts needed to restore the three-wheeled vehicle almost equals the strictly fixed cost of the motorcycle itself. But there nevertheless is a gain; the motorcycle will be running over the roads for a long time yet. Part of the repaired and restored equipment is transferred to military-patriotic associations. In this case, of course, there also cannot be any profit.

This is how diversification appears at a fairly powerful enterprise.

"There is nothing to boast about," said Col R. Valiulin, armored service department chief of of the Transbaykal Military District, whom we met at the plant's management. "The work is only beginning."

The party committee secretary of the enterprise, A. Mikhaylov, agrees with him completely. The plant workers dream about manufacturing complex equipment and instruments that people need and repairing machines that require high qualifications and modern equipment. The repair workers have great capabilities. The enterprise, say, manufactures automatic machines for corrosion-proofing of tank engines. With relatively little effort on the part of designers and manufacturing engineers, the automatic machine could be made into a compact washing machine that is popular today. The plant could also manufacture various types of household pumps, and they could find an intelligent use for the considerable number of electric motors they have accumulated. They could also increase the scale of simpler production, let us say, accessories for furniture and certain types of furniture itself.

What is impeding the development of diversification? One could blame the lack of initiative and industriousness of the enterprise's workers, but there are more weighty and serious causes. It is very difficult to arrange supplying ancillary production with raw material, materials, and component assemblies. Manufacturing the washing machines mentioned above requires plastics and special electric motors. Try as they may, the plant workers were unable to obtain them. It is even more complicated to acquire industry-wide equipment, not to mention special equipment. Today, bargains are made only by the principle: You do something for me, and I will do something for you.

The Main Armor Directorate of the Ministry of Defense sent the plant a list of 120 enterprises recommended for setting up mutually beneficial ties and wholesale trade. But no matter where the Transbaykal plant workers turned with their proposals and requests, they were turned down.

They see in the plant another attractive and very promising path of diversification: Providing the population with automotive repair services—"Zhiguli," "Moskvich," and possibly "Zaporozhets" automobiles. This work would not at all affect basic production. It is easy to set up, and they have everything necessary: a suitable vacant area in the shop; machine tool equipment; good specialists of any specialty. They even have an alternate access to the plant from the city. Only one thing is missing—spare parts. However, experimental paid repair of automotive equipment belonging to the workers themselves has shown that the quality is very high—factory-level.

Where to get the spare parts? The city service station did not want to share them; what is more, they are quite concerned with the appearance of a possible competitor. Hope remains for direct ties with the Volga Motor Vehicle Plant. If they are able to arrange this, the automotive enthusiasts of the city will breath a sigh of relief.

First of all, the enterprise would take care of veterans of war and labor and former soldiers. You see, now the so-called benefit recipients have to wait months for their turn for repairs.

Diversification for the plant, whose basic production for the next few years is clearly determined by financing, is a vital necessity. It could help correct matters in the long-neglected social and cultural sphere. It could rejuvenate the labor collective. In 22 years the repair workers have managed to accumulate funds for building only one residential building, and it is frozen at a standstill. As is the construction of a general school, which is so critically needed. The children of the settlement, which has become close to the plant, are forced to study in three shifts.

The average age of the people working in tank repair increases with each year. The day is already in sight when many will receive the right to go on pension, and this really worries the administration. There are dozens of masters in their jobs at the plant, but there are no young trainees next to them. The young people prefer to work in the taiga, in the mines, and rebukes here would be inappropriate. The enterprise does not offer housing, and its cultural base consists of a club housed in a former garage. There is no athletic facility at all. It is difficult to

attract the young to the machine tool with wages, even quite decent for these parts.

The Transbaykal workers do a good job of repairing tanks and infantry fighting vehicles. If a vehicle comes in for repairs again years later, they easily recognize their work—high quality, conscientious. Nevertheless, in the party and trade union organizations the conversation turns more and more often to improving production and restructuring the life of the collective. But they cannot conceive this restructuring without expanding diversification. First of all, a special group of specialists has been created, headed by engineer V. Malyshev; it is called upon to study this problem and set, as they say, a generating impulse.

"We do not expect quick and rapid changes," Vasiliy Mikhaylovich Malyshev shares his plans. "We are beaten realists. We have been around too much inertia, "objective difficulties," and artificial barriers. Nevertheless, in about 2 years we will show you not skewers, but consumer goods and a system of consumer services that are fully comparable to our basic production."

Baku Factory Building Converting to Medical Production

18011005

[Editorial Report] Baku BAKINSKIY ROBOCHIY in Russian of 16 Aug 1989 publishes on page 4 an interview with the Azerbaijani Minister of Health, T. Kasumov, conducted by A. Kyazimadze and entitled, "A Pressing Interview: Needles and Syringes!" According to the editorial introduction, the Azerbaijani SSR Council of Ministers has concluded a contract with the Swedish firm ADP Trading Limited International for the construction in Baku of two factories to produce disposable needles and syringes. These production lines will be installed in premises formerly housing a defense-related enterprise. The operation will occupy an area of 240 square meters. Four individuals will be able to run the operation.

Conversion: Cruise Missile Plant Producing Chocolate

90UM0023a Moscow SOVETSKAYA ROSSIYA in Russian 5 Oct 89 First Edition p 2

[Article by unnamed TASS correspondent: "Chocolate Instead of Missiles"]

[Text] A production line developed by specialists of the experimental Machinebuilding Plant imeni M. I. Kalinin, which is a part of the Sverdlovsk NPO [Scientific Production Association], is capable of producing 3 kilograms of chocolate a minute. This enterprise is changing its production from launchers for cruise missiles to non-military items.

It started off by working on an order for a line capable of producing chocolate truffles. The order was submitted by the local confectionery industry association that has set out to organize new production processes. The former defense plant, in collaboration with city enterprises, fabricated and assembled a 25-component automatic production line. This kind of responsiveness is made possible by the availability of highly-qualified specialists and laborers. They utilized the experience gained in creating assemblies employed in military equipment and existing scientific concepts. In addition, the designers and manufacturing engineers learned the technical aspects of an area that is new to them and developed ways to improve the equipment that will be used by the food producers. This resulted in their producing the high-output machinery.

The association is presently engaged in developing automatic units for use by a city meat combine and vegetable-processing enterprises.

Conversion: Buran Shuttle Project

90UM0023b Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 26 Aug 89 p 2

[Article by D. Pipko, SOTSIALISTICHESKAYA INDUSTRYIA editor, Scientific and Technical Progress Department: "All the Bounty of the Buran—Conversion May Not Justify Hopes Without General Strategy"; first two paragraphs are SOTSIALISTICHESKAYA INDUSTRIYA introduction]

[Text] Conversion. This concept has to do with reorienting a considerable part of the defense industry toward peaceful goals. It also involves many of our hopes for improving the economy. There are grounds for these hopes. Almost 350 defense plants have already made committments to produce equipment for the food industry. Two hundred institutes have also undertaken nonmilitary activity.

The magic of large numbers renders conversion into some kind of gift. We already anticipate a golden shower of fashionable goods, appliances, and machines that will wipe out the shortages. However, many people harbor a suspicion: What will it cost us? People's deputies in speeches at the Congress openly stated their fears about our approaching conversion without a scientific strategy. A persistent question was: In our rapid attempt to patch the holes in the economy, will we not squander the industrial potential that will be released?

Do Your Bit Without Loss

The last session of the USSR Supreme Soviet, in accepting the baton passed on by the Congress, raised even more doubts. Virtually all those who aspired to government posts—from the minister of public health to the minister of trade—laid out their programs with the hope that they can improve matters in their sectors on the basis of conversion. Listening to them, a person could conclude that defense enterprises deprived of military orders are willing to accept any work. Perhaps even something like metro cars instead of military aircraft.

I had an opportunity to visit plants producing combat vehicles. The systems and units that are assembled there incorporate the latest attainments of science. The manufacturing precision borders on the highest attainable. A struggle is waged with literally every extra gram of vehicle weight. Suddenly the plant is confronted with heavy wheeled wagons running on rails. Is it really necessary to "prescribe" them for shops employing people that are capable of mastering products that are scientifically highly demanding? If they are to make cars, then let them be the kind that fly: those for high-speed magnetic suspension systems that we should have become seriously involved with some time ago.

The picture that was painted portrayed a situation that consists of knotty problems for both scientists and specialists of the aviation industry. Conversion has presented them with a contradictory task that may be described as "do your bit without loss."

"Until now, the defense sectors were numbered among the few in which development proceeded on the principle of direct competition with the West," stressed Academician I. Fridlyander. "They were constantly guided by the rule of working to take the lead and always improving their products. If a potential enemy came up with some kind of innovation, we were to immediately create something similar or even better. Hence the high level of research and development. How is this level to be maintained in collectives that lose defense orders?"

"We run the risk of losing our posture of rapid mastery of new technology that has long been encouraged in the defense sectors," added G. Lozino-Lozinskiy, general director and chief designer of the NPO [Scientific Production Association] Molniya. "We all know how rare and difficult it is for most civilian enterprises to make the change to new models of machines, equipment, and appliances. If we follow their practice, we can just forget about maintaining a high level of domestic production."

"A change to new products is always associated with large losses," said First Deputy Minister A. Bratukhin. "Even changing production from a particular airplane model to one of another design requires substantial retooling. Reconstruction will consume a great deal of time in connection with our 'perestroyka posture.' And if the product happens to be completely new... You can expect workers' wages to plummet, with the added danger of losing cadre. Those that do remain will require retraining. For this reason, the product an enterprise selects to replace defense work should at least justify all that. Otherwise conversion will bring losses instead of offering an advantage."

My collocutors were not exaggerating. Aircraft construction is in a relatively favorable position as far as the conversion plan is concerned. The economy demands aircraft and helicopters; all we have to do is supply them! God himself ordered us to collaborate with the medics, who are crying out for modern equipment. The aviation industry is charged with providing fruit and vegetable enterprises with new equipment. In addition, consumer goods output must be increased by 1.5 times next year.

However, I would be less than truthful if I did not mention that in the sector there is hidden resistance to conversion. More accurately, to attempts to foist harmful tasks. Everyone understands that it is more advantageous for a plant to produce aircraft, such as the TU-204 passenger liner, for example, as a replacement for the giant carrier Ruslan, rather than change to baby carriages or metro cars. It is even more advantageous to continue to produce the Ruslan, which has cost much in the way of money and effort.

I sat there and listened as specialists spoke favorably of military air transportation authorities' intention to expand civilian freight hauling. But they asked in this regard: Will orders for heavy transport craft continue to be made? I recalled a concept that was expressed on the eve of the air show at Le Bourget: using the largest Soviet and foreign aircraft to comprise an international consortium. The idea is to deliver large amounts of freight to any point on the planet. The "candidates" mentioned were Soviet planes such as the AN-225, IL-76, and, once again, the Ruslan.

Underlying these attempts is the clear understanding that **the most economical conversion route is associated with a search for peaceful applications of military items that are in production at the present time** : tractors, radio sets, aircraft. This gives rise to another question: Why not continue to produce the Ruslan and other "high-level" products and try to put them on the world market? The resulting currency could be used to purchase common machinery, medical equipment, and production lines for vegetable producers.

This approach does more than stay away from excessive realignment expenditures. Academician N. Amosov in speaking from the session's tribune cautioned the deputies against entertaining too many hopes for defense enterprises that promise to manufacture medical equipment. He stated that the leading foreign firms have been operating successfully for decades and accumulating experience all the time. It would not be a simple matter to catch up with them. According to this viewpoint, the major advantage to exports lies in that we would acquire much sooner the appliances, equipment, and production lines than if our designers were to think them up from zero, so to speak.

From the Bond of Secrecy

We must be realists, of course; we cannot buy everything, nor will there be a desire to sell us everything. For this reason, many enterprises will be faced with the problem of coping with mastering the production of non-military items, something that will require considerable financial input. How will the money be obtained? Are they to wait for help from the government? Not necessarily—they can earn it themselves. In the opinion of specialists, **the most rapid effect that can be obtained from conversion**

would be by transferring the high technologies and materials from the defense sector to non-military sectors.

I can foresee wry smiles on the faces of skeptics: Many enterprises will not accept technical innovation - not even at no cost. Shortages and the monopolistic situation have enabled them to "push" obsolete products for decades without worrying about quality improvement. The change to financial accountability has exacerbated the situation, with the phrase "we are counting our money now" justifying the stagnation. Who will buy the expensive technologies and materials?

"Even we harbor doubts," agreed A. Bratukhin. "But we are also aware that many difficulties associated with innovation are due to poor organization and shortages of equipment and raw materials. Instead of being provided with "turnkey" materials and technologies, enterprises must come up with the latter themselves. For this reason, we intend to search for forms of sales and mastery that would be advantageous both to us and the customer."

"The task is to render this innovation transfer process continuous," added R. Shalin. "We should start with materials and technologies from the Buran - Energiya complex, the high level of which has been proved in practice."

Much has been written about the heat-resistant plates that protect the Buran as it reenters the dense layers of the atmosphere. When you pick up this white plastic for the first time, you may be bewildered: It weighs about as much as foam plastic. Contrary to the thinking that armor must be monolithic, this protection from fire consists of 95 percent of ... space. Only 5 percent of the volume is occupied by specially developed superthin quartz fiber.

The space armor is 7 times lighter than water. However, this does not prevent it from withstanding up to 1,300 degrees of heat. Even a thin layer subjected to a scorching flame is capable of maintaining room temperature on the other side. Vehicles of rescuers and firefighters protected by this "armor" would be indispensible in forest fires, mine accidents, and on oil and gas fields. It is too bad that they were not available in the area of the accident that occurred in Bashkiria.

"The VIAM [All-Union Scientific Research Institute of Aviation Materials] and NPO's Molniya and Tekhnologiya that developed this material can deliver it to any industry in any amounts," said A. Bratukhin, "and they are willing to help in its use."

No, this is not largesse on the part of the seller; it is merely common sense. The manufacture of this plate is a high-precision process that not everyone would take a risk on purchasing. To endow it with strength, for example, the quartz fibers must be welded together. This is done by depositing extremely small balls of a surface-active substance on each fiber. The material remains fairly pliant even after welding. The finishing process entails special procedures which only the aircraft builders are able to perform. Only they know the secrets of repair: You would not discard a plate costing 300 rubles simply because an edge is broken off.

"The heat-resistant plates for the Buran are exotic, and the circle of users is limited, of course," continued G. Lozino-Lozinskiy. "But they make it possible to prevent losses in extreme situations, if they are especially significant. Hence the problem of the conversion tactic. It would be possible to go the 'wholesale' route, of course, attempting to gain a large advantage by massive application of simple and accessible defense developments. However, in my opinion, **conversion should be guided by the rule: Take from the defense sector primarily that which seems to offer a new quality, a solution to unresolved problems."**

One of these developments is an aluminum alloy for the Energiya rocket, which employed liquid hydrogen for the first time in domestic practice. The tanks are made of a material capable of withstanding temperatures close to absolute zero—minus 253 degrees. The difficulty of the task would be appreciated by anyone who has heard about the problems involved with creating equipment for the Far North: At 50 or 60 degrees below zero, the best steels become as brittle as glass. Parts made of them disintegrate. Efforts were successful in finding for the Energiya an alloy which increases in strength by a factor of 1.5 as it is cooled to the temperature of liquid hydrogen!

"Yes, this material is indispensible for machines and mechanisms to be used in the north," confirmed R. Shalin. "In addition, if it is also necessary to reduce weight, there is a superlight aluminum-lithium alloy first developed by Academician Fridlyander. It also becomes stronger and more plastic as temperature is reduced to nearly absolute zero. We developed it for fuel tanks to be used on hypersonic aircraft of the future. And it can also be successfully employed in tundra."

My collocutors saw me as some kind of future customer. For that reason, they brought out other new ideas from the bond of secrecy.

"To reduce noise in textile factories, we can offer a special aluminum alloy to produce gears for looms."

"If the porous plates from the Buran are 'impregnated' with aluminum melt, the result is a material for piston heads that makes it possible to raise an engine's compression ratio and improve operating characteristics."

"You can coat the exhaust pipes of the same vehicle with our heat- resistant enamels to prevent corrosion."

"If a special substance called 'argonit' is applied to the inner surface of bearings, they will function without any lubrication with virtually no wear."

"Even a thin layer of our sealants prevents leaks down to negative temperatures."

"Conversion demands imagination, bold thinking," G. Lozino-Lozinskiy said suddenly. "Remember the black nose and the wing leading edges of the Buran? They are made of a superheat-resistant material that can withstand up to 2,500 degrees. Who do you think showed the most interest? Medics!"

Let us dwell somewhat on an area of technology. If you dissolve carbon particles in some substance, immerse carbon fibers into this mass, and burn out the solvent, you obtain a material of the "carbon-carbon" type. Research has shown that it is inert with respect to live tissue and is not rejected by the body. For this reason, it is indispensible in a wide variety of "spare parts" for humans—from joints to—of all things!—new teeth. The root of a tooth is implanted into the gum, and the upper portion is covered with a plastic or porcelain crown to conceal the black color. There are other applications where medics successfully collaborate with the creators of this material from the NIIgrafit [Scientific Research Institute of Graphite] and the NPO Kompozit.

Composites Have Landed

Today designers and technologists of the most advanced enterprises are not studying electronics; they are involved with the principles of textile production, instead. To be more accurate, with the properties of fibers. Their "fascination" is with composites, which are fundamentally new materials. To be even more accurate, they are studying the discovery that any substance that is made into a fiber exhibits an unprecedented increase in strength. When this fiber—acting as reinforcement in concrete—permeates an item made of carbon, plastic, or aluminum, the item becomes much stronger.

Items made of composites are at least 1.5 times lighter than metal and offer two to three times more reliability, while their manufacture is 30 percent easier. Created for aviation and space technology, such as for the Buran, they are more than ever coming down to this sinful earth, where uses are being found in a wide variety of sectors. Foremost is the automotive. Many foreign firms are already attempting to employ these composites in leaf springs, bumpers, drive shafts, suspensions, gas cylinders, fuel tanks, body sections, and bodies proper.

At a European conference on composites that was held in Paris this past May, it was stated that in the next few years parts made of them will comprise 25 to 30 percent of a motor vehicle's weight. This is what "they" plan to do. In our country, the secrets and equipment required to manufacture parts made of composites are held mainly by defense sectors. That is why I asked my collocutors the following question:

Why can't your plants provide the VAZ with light and long-lasting motor vehicle bodies made of composites?

"We can produce entire motor vehicles, including the engines and all equipment," countered A. Bratukhin immediately. "In that case, who will produce fixed-wing aircraft and helicopters and improve their characteristics, if not we?"

That was the kind of reply I expected; I can understand the aircraft people. Composites make up only 4 to 4.5 percent of the Ruslan's weight, while by the end of the century their weight must be brought up to at least 25 percent. The creators of the IL-96 and the TU-204 set their goal at 17 to 18 percent. However, helicopter designers are already working on craft in which composites are to comprise as much as 65 percent of the weight.

"You can see for yourself," concluded A. Bratukhin, "that existing capacities for producing items made of composites for our own uses are limited. There is another reason, however. If we really consider composites to be materials of the future, this means that all sectors should start now to learn how to work with them. Our task is to go further, accumulate experience, and, if necessary, remove the many barriers that still exist."

My collocutors unfortunately did not dispel doubts relative to prospects for wide application. The impression they created was that much of what they offer is accessible only to large enterprises. The majority of medium and small ones, of which there are tens of thousands, simply cannot afford expensive technologies and materials. Also, most consumers are always wary of innovation. If enterprises were to attempt to introduce these particular composites, for example, they would first find it necessary to try them in several parts. Who is willing to purchase expensive equipment to do that?

"It is necessary to change the way in which they can be introduced," agreed A. Bratukhin. "It should be so arranged that innovations that are too expensive for a particular enterprise can be mastered on a share basis. Many enterprises would be willing to take a risk under those conditions. For example, our ministry saw fundamentally new possibilities while viewing the local Moscow program "Progress-95." Wherever the branch approach cannot be applied, it is necessary to set up interbranch local arrangements."

The possibility of enabling a wide circle of enterprises to accept the conversion baton is not the only advantage these "share" plants have to offer. Production costs can be reduced substantially as a result of their high output rates. In a word, interbranch production arrangements can become one of the more reliable introduction channels. A question remains: What will we supply to them?

Market or Gosplan?

In conceptualizing our grandiose plans, we sometime behave in an overly naive manner. It is quite possible that many persons are not aware that until recently all our big decisions pertaining to wide introduction of composites were nothing more than words. The stumbling block was special units—autoclaves. Under the action of temperature and pressure in their chambers,

synthetic resins surrounding the fibers are polymerized and become solid. Finished products are obtained at the outlet.

"If these products are motor vehicle bodies or an airplane section, the autoclaves must be sufficiently large," stressed R. Shalin.

For many years, autoclave units provided with automatic systems remained on the list of scarcities. For example, the aviation industry was forced to purchase them from the FRG firm of Scholtz, paying an average of 400,000 dollars. In our country, the sole manufacturer was the Uralkhimmash [Ural Heavy Chemical Machinery Plant]. Although the price rose from 400,000 to 900,000 dollars, it refused to change its attitude: It wanted no new orders.

The situation was saved by Academician B. Paton, who headed the state scientific and technical Promising Materials program. He had close ties to Atommash specialists in the area of welding. Upon learning that the association was losing out on orders for AES equipment, he suggested that it undertake the manufacture of autoclaves.

This story has an almost happy ending. However, in many cases attempts to borrow the experience gained by defense enterprises can run into the same obstacle. Hence the condition: **Conversion programs should be set up to include production of the necessary equipment or make provision for production of such equipment.** By the same token, there already is an indication of a threat that wide distribution of many innovations, particularly composites, will be hindered by scarcity of raw materials.

"All the world is using carbon plastics to make household items, tennis racquets, bicycles, skis, and ice skates," stressed G. Lozino- Lozinskiy. "But here... It is possible that someone feels that sports are not one of our more important problems. Nevertheless, take agriculture. That is where even simple fiber plastics can prove enormously useful!"

In barnyards, where something is always leaking or rotting, corrosion- resistant pipes and tanks made of fiber plastics can become indispensible. They can be used to make silos, fertilizer vehicles, and tanks for highly reactive chemicals. All these items would last at least two to three times as long as ones made of steel. If we realize that fiber plastics are much lighter than metal, we can see that one ton can replace 4 or 5 tons of steel. Finally, the material utilization factor in the case of steel articles is less than 50 percent, while in the case of fiber plastics it is as much as 90 percent.

The result is that one ton of these very simple composites theoretically replaces 12 to 15 tons of steel! It remains to say that production organization for one million tons of fiber plastics costs about the same as the creation of capacities to produce one million tons of rolled metal. The question here is: Which is the more advantageous investment of money?

"Unfortunately, our planning organs remain faithful to ferrous metals," continued I. Fridlyander. "We produce almost twice as much steel as the USA, but we still experience a chronic shortage of construction materials. The Americans are willing to share their output, since they prefer plastics and composites. If we do not make a change in policy in favor of capital investments in polymers, many aspects of conversion, particularly attempts to adopt progressive technologies, will be frustrated by shortages of raw materials."

We can obtain a relatively clear picture by comparing material output in tons. Yes, 1988 steel consumption in the USA amounted to about 100 million tons, while the figure for plastics and fiber plastics is something less than 28 million tons. In our case the figures are 162 and about 6 million tons, respectively. "Yes, that is quite a difference," retort advocates of metals. "But you should realize that they make more steel." As if they did not know that designers are much more interested in the volume of materials than the weight. Converted into cubic meters, the data tell us that the USA is using 1.78 times more fiber plastics than steel, while we are using 4.3 times less.

Clearly, this kind of difference cannot be eliminated by setting up arrangements between enterprises or even branches. The situation can be changed only by instituting a tough, consistent state policy. Who will develop and make it a reality? Has the time not come to create a special governmental organ that would take charge of conversion management? My collocutors, who are wary of the overabundance of supervisory organizations, answered with a categorical "no." However, ...

Horizontal Progress

Defense sectors, which until recently looked down upon other sectors, are now forced to think about how to keep their enterprises busy, what to sell, and how to do that. In their scientific research institutes they hold exhibitions and gatherings for throngs of civilian who ask prices and gasp when told. Acquaintances are made, counteroffers advanced, and joint programs drawn up. However, this process has the ring of bazaar haggling, with overheated merchants arranging for the country's future to "come under the hammer." Once again the thought comes to mind that**flexible state regulation of conversion is required.**

I foresee violent opposition on the part of proponents of pure market relations. I wish to remind the reader that Japanese firms, for example, did not act without control in their acquisition of foreign licenses. A special government committee looked very closely at what advantage a particular technology or product would offer the country, and whether this would promote future progress. Continued belief in the market with its vagaries

does not hinder Western politicians from insisting on passing special laws on conversion and creating disarmament councils.

"What has been said does not mean that we must blindly follow their practice," said I. Fridlyander. "All the more since our views of conversion differ. There it carries a threat of overproduction and unemployment. In our case conversion is not simply disarmament; it is also a means to correct the economy, especially by reducing the scarcity of goods and services. This hardly requires setting up laws or control organs. For conversion to make progress as it should, it is merely necessary for people to know its strategy and main idea."

This kind of idea does exist. Today even the most advanced countries would not think of their development in terms other than international division of labor. We simply will never remove the impasse if we do not start to sell on the world market that which is advantageous, not what we prefer. At a cheap price. And we must purchase that which makes no sense to try to produce ourselves. According to this point of view, **conversion is the most realistic, if not the sole, possibility of raising the level of products so that we can break into and establish a foothold in the world market.**

We all have heard it said a number of times that if our designers and technologists had access to all the modern materials they require, they would be on an equal footing with their foreign colleagues. This being the case, the solution is obvious: Compile, on the basis of the best examples of products we are presently manufacturing, a list of components that are hindering competition. Then task the respective defense enterprises with their production. In essence, what we are saying is that**conversion makes it possible to shift the bounds of responsibility for non-military production onto the shoulders of defense sectors.**

There are possibilities for the above. Considerable ones, at that. In the same aviation industry, any aircraft plant merely sits on top of a pyramid. Located somewhat below are enterprises that supply it with engines, systems, assemblies, and equipment. Lower yet are metallurgical and various other plants. If the head plant were to stop producing military items, they all may be left without work. This in spite of the fact that much of what they produce can be subjected to minor "correction" and successfully applied in civilian production. Why not go that route and legitimize it by means of state orders?

Yes, I should have written a year ago that all products that stand a chance of being put up for export should be made to go through a filter of nondepartmental expertise. Items that do not pass scrutiny should be worked over to be made suitable for conversion. However, we all are starting to understand that even the government should employ economic levers, not orders and prohibitions. Only in this way will each plant be forced to subject to critical evaluation not only its export potential, but also the possibilities of paying its suppliers for high- quality components. Then it alone will decide if it can break into the world market.

Lastly, we all must finally understand that**conversion is not a ticket for a lottery where there are no losers, but merely a chance that must be utilized skillfully.**

FUELS

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Minister Shchadov on Coal Industry Performance

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[Article by M. I. Shchadov, USSR Minister of the Coal Industry: "Horizons of Renewal"; first two paragraphs are source introduction]

The status and prospects for developing the USSR's coal industry during the restructuring that is going on in the country are revealed. The goals for restructuring engineering policy and control of the branch are presented. Problems of the comprehensive utilization of coal and of improving its quality are examined.

[Text] **Dedicate the development of branches of the fuel-and-power complex to the task of firmly supporting the country's requirements for all types of fuel and energy by increasing the recovery and production thereof, with the planned implementation of a purposeful energy-saving policy in all branches and spheres of the national economy.—From the Main Directions for the Economic and Social Development of the USSR for 1986-1990 and for the Period up to the Year 2000.**

Some of the main areas of developing the country's coal industry during the current stage of restructuring the national economy are maximum utilization of the production potential, a universal acceleration of the pace of scientific and engineering progress, a radical restructuring and reequipping of enterprises, conversion to economic methods of control, the introduction of full economic accountability and self-financing, and anticipatory development of the social infrastructure.

The draft of the USSR Power Engineering Program calls for a 1.4-fold rise in coal mined by the year 2005 (see the table).

	Coal mining, millions of tons				
Basin	1985 (actual)	1990 (planned)	Forecast		
			1995	2000	2005
Donets	197.1	194.8	188-193	184-193	178-193
Kuznetsk	141.4	156.3	165-170	178-188	193-213
Kansk-Achinsk	40.7	62.3	70-75	115-130	165-180
Ekibastuz (including the Maykyuba field	80.5	93.2	95-100	120-125	130-135
Total for USSR Minugleprom*	718	785.3	807-827	887-906	984-1034

*USSR Ministry of the Coal Industry

In order to reach the contemplated goals and also to compensate for abandonments and a reduction in capacity by more than 215 million tons of coal by the year 2005, construction of new strip and underground mines with a total production capacity of 450-520 million tons must begin and 400-460 million tons of capacity must be put into operation by the end of the period. However, the unevenness of distribution of the reserves (27 percent of the explored reserves are in the European part of the country, 63 percent in the eastern regions) will require the adoption of individual solutions for the construction of new mining enterprises, taking into account the requirements of the whole national economy for power-engineering resources.

The main direction for increasing coal mining remains accelerated development of the open-pit method. Already by 1995 the open-pit method will be almost comparable with the underground method in amount of coal mined, and later will outstrip it. It is planned to obtain all the growth in the country's eastern regions, mainly in the Kansk-Achinsk, Kuznetsk and Ekibastuz basins, where fuel-and-power and coal complexes will be established. New strip mines will be put into operation in these basins, and existing mines will be rebuilt.

In the country's European area, where the Donets, Moscow-region, Pechora and other basins are located, coal mining is being stabilized. Further development of these basins will follow the route of reequipping existing underground mines with machinery. In various fields with more favorable geological conditions, new underground mines which are to replace retiring mines will be funded for and constructed. Also, strip mines will be built in the Dnepr Brown-Coal Basin, to provide fuel for the Ukraine's population. The mining level in this region will be preserved at approximately the present level until the year 2000, and later it will begin to fall.

Another strategic line in the branch's development is a universal rise in the pace of engineering progress.

A radical restructuring in controlling the nation's economy and conversion of the branch to full economic accountability and economic control levers are advancing new methods and forms for introducing the achievements of scientific and technical progress to the

forefront, with a constant updating and realization of the potential that has been created in the branch. The strategy of controlling scientific and engineering progress is now founded on three basic principles:

—maximum concentration of existing forces and resources in key areas;

—expansion of the use of new engineering solutions with a view to obtaining the greatest yield prior to obsolescence; and

—acceleration of scientific and design-development results which will enable the creation of basically new equipment and technology.

The development of equipment and technology for open-pit coal mining calls for a further buildup of flowline production, based on the use of automated systems of machinery and sets thereof and conveyor transport of coal and stripped rocked.

The greatest economic benefit while excavating thick coal seams will be achieved with the use of rotary excavators, combined with conveyors; special attention should be paid to this effective field.

Further increase in the share of coal mined by the open-pit method to 56-60 percent will depend upon the work of domestic machinebuilding plants, which are mastering a new generation of rotary mining excavators with productivities of 1,600, 3,150, 5,250 and 15,000 m^3)use of continuous-action equipment will be helped by the creation and introduction of basically new equipment—ERP-5250 V top-loading rotary excavators and MPU-5000 bridge (interbench) loaders.

Conveyor transport will also be used in complicated conditions, for example, at Central Kuzbass strip mines, where cyclic-flowline technology schemes will find use. In so doing, the prime cost for mining coal will be reduced by 30-50 percent, and labor productivity will be increased 1.5-fold or more.

New fields in the country's eastern regions will be developed with the use of new operating schemes. An effective transportfree system of development with excavator transfer of overburden to dumps, primarily by walking excavators of high unit capacity. Optimal technological solutions and a set of draglines of different sizes with bucket capacities of 10-100 m^3 and boom lengths of 45 to 125 meters, which have been developed and the domestic machine building industry is mastering, are to be introduced. The ESh-40/85, ESh-65/100 and ESh-100/125 draglines with bucket capacities of 40, 65 and 100 m^3 should have a special place in the pool of walking excavators for strip mines.

In the near future domestic industry should master the production of single-bucket excavator models—mechanical shovels with bucket capacity of 10, 15 and 20 m^3 and hydraulic excavators with bucket capacities of 8, 12 and 20 m^3.

Priority areas of scientific and engineering progress in equipment and technology for mining coal by the open-cut method are:

—expansion of the amount of use of flowline technology for mining (up to 340 million tons) and stripping (up to 130 million m^3) operations by the year 2005, using rotary excavators with a productivity of 5,000-15,000 m^3/hr in combination with cantilever spoil dumpers, transloaders and conveyors, thus increasing productivity of the equipment complexes 1.3-fold to 2.4-fold and labor productivity 1.5- fold to 2.5-fold in comparison with the use of cyclic technology;

—the introduction of cyclic-and-flowline technology for excavating rocky overburden in an amount of up to 110 million m^3, using single-bucket excavators—mechanical shovels (including hydraulic) in combination with conveyor, truck-and-rail, and truck and conveyor transport, and with sifting and crushing units that have productivities of, respectively, up to 4,500 tons/hour and 3,500 m^3/hr; and

—the wide use of technology that uses cyclic-action mine-transport equipment of great unit capacity: a highly efficient transportfree system for excavating 500 million m^3, based on the creation and introduction of dragline excavators with bucket capacities of 20 to 100 m^3, and the excavation of overburden with coal seams of complicated structure by hydraulic excavators with bucket capacities of 8-40 m^3 and open-pit mechanical shovels with bucket capacities of 10-30 m^3.

Experience in the construction and buildup of the production capacity of strip mines in the Ekibastuz basin, where equipment of a new engineering level is being tested, is an example of the intensive mastery of coal fields. Here a new flowline technology was born, under which coal is delivered by conveyor directly from the mine face to a blending and loading complex. This technology precludes idle excavator time and provides for that coal blending in a flowline that corresponds to the greatest extent to the requirements of modern power-engineering. The flowline technology for mining coal took its first steps at the Vostochnyy strip mine.

The branch's first temporary creative collective Potok has been engaged in developing a strategy and the main directions for developing the southern group of Ekibastuz strip mines up to the year 2000, based on ensuring maximum use of flowline production.

It developed recommendations and engineering solutions aimed at speeding up the pace of development of the southern group of strip mines, improving engineering-economics and ecological production indicators, and raising labor productivity by using flowline and cyclic-flowline technology for mining and stripping operations on a broad scale.

Introduction of the proposed solutions will enable more than 300 million rubles of capital investment to be saved

by the year 2000, production concentration to be increased to almost 35 million tons per strip mine (versus 10 million for USSR Minugleprom as a whole), and the proportion of ETEK [Ekibastuz Fuel and Power Complex] in all the coal mined throughout USSR Minugleprom to be raised to 14 percent.

Forming of the Kansk-Achinsk Fuel and Power Complex has started, taking into account experience in building up production capacity in the Ekibastuz Basin. It is planned to bring brown coal mined up to 165-180 million tons per year here and to create thermal electric-power stations with a unit capacity of up to 6.4 kW in 10-15 years.

At the Irsha-Borodino, Aban, Berezov, Nazarov and other Kansk-Achinsk Basin fields, the coal seams 6-15 to 60-96 meters thick that are being worked are distinguished by gently or slightly inclined deposition not far below the surface. This has foreordained a potential for creating large strip mines of 50-60 million tons of coal per year here.

The Kuznetsk Basin, where the pace of open-pit coal mining has been increased in recent years, has a great potential for the development of combustion power engineering and the byproduct-coke industry. Existing enterprises are being rebuilt and new fields are being assimilated. The diverse circumstances of deposition of the seams, the inhomogeneity of the country rock's physical and mechanical properties, and the complicated surface relief have predetermined the necessity for using unique mining-technology schemes in the Kuzbass [Kuznetsk Coal Basin].

Belt conveyors are being introduced in great numbers in stripping and mining work. Their use, in combination with that of single-bucket excavators and large-capacity trucks, enables a new type of open-pit transport of mined material to be created—the automotive conveyor line, which is the basic flowline and cyclic-flowline technology for mining work and raises labor productivity 1.5-fold.

However great may be the achievements of the open-pit method, underground mining retains its great importance: underground mines today and for the long term will remain the chief supplier of high- quality coal. The underground method is extracting 55.6 percent of all the country's coal at present. The most valuable coal, which goes to byproduct coking, and anthracite are being mined practically in underground-mines alone. However, this requires penetration down to increasingly deeper horizons, where mine-geology conditions are complicated, temperature and the gas presence rise, and the danger of sudden coal or gas outbursts and of bumps increases. All this will require constant improvement of the underground-mine inventory and the equipping of enterprises with the newest equipment, the use of progressive technology, and an increase in capital costs.

In order to mechanize working of the seams under complicated mine-geology conditions, 1KM-103, KD-80, 1KMT, 2UKP-5, 3OKP-70B, 4OKP-70B, 1KM-88S and other longwall miners, 1KShE, RKU-10, RKU-13 and 2GSh-68B breakage-face cutter-loaders with chain-free feed system, unified SP-87P, SP-202 and SP-301 drag-chain conveyors, and equipment for steep seams—2ANShch units, KNK and KGU-D longwall miners, and Poisk-2 cutter-loaders—have been created and accepted for series production.

In mine working, mainly light-type cutter-loaders, which work on coal or the chopping of weak rock, are used for mine excavating. Medium-type tunneling cutter-loaders comprise 12 percent of the total fleet. Heavy cutter-loaders are being created for excavating rocks of increased cross-section with a strength coefficient of f equals or is less than 7 in accordance with M. M. Protodyakonov. GPKS and 4PP-2M cutter-loaders are being used; and new P-160 and KP-25 cutter-loaders for mining an area with a cross-section of, respectively, 9-33 m^2 and 7-25 m^2 have been developed. In 1988 the share of mining done with the mechanized loading of coal and rock was 83.2 percent, with cutter-loaders 43 percent.

Some types of underground-mining equipment whose series production has been mastered (the ANShch and AK-3 shield units, the KM-130 and KMT mechanized supports, and so on) are on a par with the rest of the world, but the engineering level of much equipment still is low (remote control of machines instead of automated control, obsolescent automation equipment, and so on).

For underground mining operations the main direction of engineering progress is a rise in the level of comprehensive mechanization of operating processes, which permits the labor productivity of underground miners to be raised and, thus, their numbers to be reduced, and the work of the underground miners to be made safer. The adverse effect of increase in depth of mining and the worsening of mine-geology conditions at underground mines should be compensated for completely by reequipping enterprises with machinery.

Breakage-face operations will be reequipped mainly through series production and the supplying of underground mines with enough improved longwall miners, such as the UKP, KM-137, KM-138, KM-142, KD-80, ANShch, and others. A search is being made for new engineering and operating solutions, among which are work on creating coal-mining units that do not require the presence of people at the breakage face (unmanned mining).

We face the task of raising the share of developmental excavation by cutter combines to 65 percent by 1990, by increasing the production and introduction of cutter loaders that are on a new engineering level, for excavating rocks of medium strength, rotary cutter loaders for excavating hard rocks, entry-cutting cutter loaders, and multipurpose longwall miners for entry-cutting and excavating.

The development of underground robotics, which is being called upon to solve many complicated engineering-economics and social problems has a special place.

An important task that must be solved in the next 10-15 years is that of developing the upgrading of coal. In order to improve the quality of coal output, an increase in the amount of coal processed at preparation plants to 490-505 million tons and in the output of concentrate to 270-280 million tons is called for. This task will become especially urgent in the Donets Coal Basin, where seams with the worst coal quality must be developed, and in the Kuzbass, whose coal is to be transported to western regions in increasingly larger amounts. Coal-preparation plant capacity is to be increased greatly by building new plants and rebuilding existing ones, thereby solving the problem of satisfying more completely the national economy's need for high-quality coal.

The branch is doing much about the problem of the integrated use of coal, by developing and industrially assimilating new operating processes and equipment for separating coal in heavy-density media and for flotation and drying with automated control, and by creating automatically operating sectioned, highly productive preparation plants (up to 1,000 tons/hour).

Thermal upgrading—the removal of low-calorie components from the coal by heating—also is yielding good results. Heat-treated coal is marked by low moisture content and by stability of its heat-engineering properties. This technology can be used widely for the intense processing of low-calorie brown coals of the Kansk-Achinsk Basin and the hauling thereof over great distances. The process of burning a water- coal slurry which contains 70-75 percent coal and 25-30 percent moisture that is being developed in a number of countries is promising. Fireboxes that now burn oil are easily remodeled for coal slurry. The first phase of a pipeline for sending slurry from the Kuzbass (the city of Belovo) to the city of Novosibirsk has already been built.

The accelerated development of capital construction based on the use of industrialized methods and comprehensive mechanization of the work is an important factor which promotes successful solution of the branch's economic and social tasks. The surmounting of adverse phenomena in this area and achievement of the contemplated level of mining will require a sharp increase in the amount of construction and installing work that is done by USSR Minugleprom construction organizations. In so doing, the amount of outside contract work must be double the level planned for the 12th Five-Year Plan. In the Irkutsk Basin, the Transbaykal, the Far East and Central Asia, where USSR Minugleprom's construction base is practically nonexistent, the main growth in construction volume can be provided by outside contracting. The manning of in-house construction organizations, primarily in Siberian and Far Eastern areas, also will be greatly increased.

Coal machinebuilding, which creates the base for the branch's technical progress, is being developed at an outstripping rate. The main direction here is that of reequipping and expanding existing enterprises. Moreover, three new plants will be constructed. Long- range plans are called for, which will satisfy completely by the end of the century the mines' machinebuilding requirements, the share of output of the highest quality category of the most important types of underground-mining equipment—breakage-face and developmental cutter loaders, belt and drag-chain conveyors, and mechanized longwall miners—being brought up to 75-98 percent (the plan for 1990 is 51 percent).

The output of mechanized longwall miners at coal machinebuilding plants during this period is to be increased over 1985's by 19 percent; developmental cutter loaders and longwall miners 1.3-fold; equipment for underground-mine automation, signaling and communications 3.5-fold, and spare parts for underground-mine equipment 2.1-fold. New, highly productive and reliable mining equipment, including automated equipment (based on microprocessor technology), is to be created and assimilated. In developing the equipment, the main attention should be focused on increasing the productivity, power-worker ratio, manufacturing quality (based on special constructional materials), and operating reliability, on equipping machinery with diagnostic equipment, on unifying and creating box-module constructional structure, and on increasing wear resistance.

In order to reduce manufacturing time and to raise the quality of mining equipment (the share of coal machinebuilding in the total amount of the branch's output is about 12 percent), the mechanism for economically accountable mutual relations between the experimental-design institutes and the plants that manufacture test models and serial batches of new equipment has been improved.

Prior to converting to the new management terms, a situation existed under which USSR Minugleprom allocated resources from centralized funds to institutes for design-development work, and after completion thereof, determined the manufacturing plant and the test lot. In 1989, USSR Minugleprom's Main Scientific and Engineering Administration became the client for new equipment, under the branch's order. It concludes the contract not with the design-development institute but directly with the machinebuilding plant—the manufacturer of the new items. The contract covers the whole complex of operations for creating an item—development of the design papers, fabrication of experimental models (or lots) for testing, and revision of the papers for serial production. The plant, in the role of client, enlists the services of the necessary cooperating entities—design-development and scientific-research institutes and production associations. Thus, the way is paved for accelerating production preparations at the plants and, simultaneously, for creating the operating documentation.

Much attention is now being paid to ecological problems. For the coal industry these are urgent matters, since, with the increase in strip mining, the surface areas being destroyed are growing. Full restoration from this destruction is called for through the development of recultivation operations.

In the area of the conservation and rational use of water resources, the amount of the recycled water supply is to increase to 3 billion m^3, or 1.3-fold over 1985.

In order to protect the air, a set of measures for reducing discharges of harmful substances into the atmosphere is being taken: the equipping of 1,400 boiler units and 616 suction systems with dust-trapping equipment; the extinguishing of 430 burning rock dumps by 1995; the conversion of 35 drying installations at preparation plants to the 3- stage system of scrubbing; the updating of 6,770 dust-trapping systems, and so on. The introduction of air-protection measures will enable the entry of harmful substances into the atmosphere to be cut to 1 million tons per year.

With a view to conserving land resources and the most rapid return of preempted land to permanent land use, the branch is to recultivate 117,500 hectares. Annual recultivation volume by the year 2005 will increase by 2,200 hectares, or by 44.5 percent, over 1985.

The coal industry is one of those branches where problems of work safety are first priority. Measures to improve safety equipment and to protect labor, which are aimed at improvement of the ventilating system, the struggle with dust formation, and the prevention of sudden outbursts of coal and gas, are being developed over a broad front. But the strategy for developing the branch, which calls for the increased mining of coal by an overtaking increase in open-cut mining, which is much safer than underground mining, and for high rates of engineering progress at underground mines that will enable the number of dangerous work places to be reduced and the degree of danger of the work itself to be lessened, by the introduction of more modern machinery, longwall miners and automated processes, plays a most important role here.

The coal industry and its successful development are connected most intimately with the prospects for increasing production in associated branches which consume coal and provide coal workers with their output. Because of this, our associates must solve a number of questions if the greatest economic benefit is to be achieved.

The coal industry's rate of development, especially in strip mining, is determined by the degree to which the industry is supplied with excavators, transport equipment, drilling tools, and numerous items of auxiliary equipment, which are produced by Mintyazhmash [Ministry of Heavy, Power and Transport Machine Building], Minavtoselkhozmash [Ministry of Automotive and Farm Machine Building], USSR Minstroydormash [Ministry of Construction, Road and Municipal Machine Building] and other ministries.

The requirements of strip mines for equipment must be satisfied more completely in regard to both quantity and type. The tasks of the MPS's [Ministry of Railways] rail transport are being raised to a new level. Underground and strip mines must be supported not only by the uninterrupted delivery of empty railroad cars but also by solution of the problem of hauling increasing amounts of Kuznetsk coal to the Urals and the western regions.

In 1989 the coal industry transferred to economic accountability and self-financing. Preparation for this conversion embraced a set of measures that included the supplying of production equipment, the conversion of workers to the new terms for wages through in-house sources, the development and introduction of progressive ways for organizing the work, improvement of the financial status, the development of methodological documents and economic standards, and organization of the teaching of economics to workers. Implementation of these measures and a rise in the labor activity of working collectives have provided for the successful fulfillment of plan tasks of the first three years of the 12th Five-Year Plan.

The branch is operating successfully this year. The branch has done definite work to develop economic accountability within the production facility at the level of the primary collectives of brigades and sections. Today brigade forms of organization and wages cover three- fourths of the workers of industrial enterprises, and half of them work under the principles of economic accountability. The organization of work under the principle of the collective contract, wherein each member of the collective receives pay for the final result, has spread widely. Voroshilovgradshakhtostroy [Voroshilovgrad Mine Construction Combine], Yakutuglestroy [Yakutsk Coal-Facility Construction Combine], Ekibastuzshakhtostroy [Ekibastuz Mine-Construction Combine], Karagandashakhtostroy [Karaganda Mine-Construction Combine] and Dneproshakhtostroy [Dnepr Mine-Construction Combine] have converted completely to the collective contract.

Establishment of the collective's material responsibility for the use of resources and for incentives to save them has become a main direction in developing economic accountability in brigades. The situation that exists in economically accountable collectives, under which up to 50 percent of the saving in prime operating costs is spent on incentives, is yielding positive results. Many associations (Severokuzbassugol, Kemerovougol, Yuzhkuzbassugol, Pavlogradugol and Rostovugol [the North Kuznetsk Basin, Kemerovo, South Kuznetsk Basin, Pavlograd, and Rostov coal-production associations] and other such associations have introduced intra-association current accounts for structural units, as well as limited checking accounts for materials. These promote intensification of the savings campaign in each laboring collective. Conversion to the new management

terms, along with improvement of brigade forms of economic accountability, have stimulated economic accountability relationships at the enterprise level.

For the more effective utilization of temporarily free funds, the branch has introduced a system of intrabranch commercial credit-granting for its associations, enterprises and organizations. Financial settlement centers are being created in production associations in order to deepen intra-association economic accountability and to expand the monetary- turnover sphere.

And yet, despite the definite positive advances achieved in the past three years in the branch, a substantial portion of the underground and strip mines are not meeting the plan's goals for mining coal and are not assimilating production capacity, the updating of underground-mine and open-cut mine inventory and improvement of the mining activity are not being performed at an adequate pace, a lag in reproduction of the breakage-face front is being tolerated, and highly productive mining equipment is not being used effectively enough. The laboring collectives have taken aim at the most rapid elimination of these deficiencies: additional economic levers are being brought to bear.

Control figures on how much developmental excavation has been done at underground mines and and how much stripping has been done at strip mines are specific for coal-mining enterprises. These indicators mark one of the most important areas of activity of the mining enterprise—preparation of the work front and the creation of coal reserves prepared for excavation in the required amounts (which are determined by flow sheets).

Long-term economic standards that are common for all branches of the economy have been established for the coal industry, but because, given the wholesale prices that exist today, the branch's output is unprofitable, USSR Minugleprom enterprises have been released from payment for production capital and labor resources.

In accordance with the USSR Law on the State Enterprise (or Association), juridically independent enterprises, which in the coal industry are the production associations, have completely at their disposal all rights in the area of planning. At the same time, for purposes of maximum involvement of specific production sections of the association in the economic control process, underground and strip mines, preparation plants and other enterprises have been granted broad rights in the development of five-year plans for production and economic activity.

The mechanism for forming wage and material-incentive funds calls for incentives for the strenuous plan goals that have been adopted. For an amount of output adopted for a given year above that of the five-year plan, the size of the funds is increased in accordance with the higher standards. The use of these economic stimuli have induced most associations to adopt in the 1989 plan goals for coal mining that exceed the five-year plan goal.

With a view to raising the motivation to improve the quality of the coal shipped and to make more effective use of production waste and of material resources, enterprises (and associations) are making additional deductions from profit into the economic incentive fund. This has helped greatly to reduce the ash content of the coal mined and shipped in 1988 versus the norm and in comparison with the preceding period. More than 47 million rubles have been deducted into the economic incentive fund for improved fuel quality.

Evaluation of the level of fulfillment of contractual commitments should become more flexible. The possibility of one association making up for deficiencies that have been committed by another should be specified, and the terms for compensation should be determined by appropriate agreements between the corresponding associations.

Deep analysis of the branch's production-economics activity, deep study and evaluation of the efficacy of the new economic mechanism, the universal use of intraproduction reserves based on introduction of the achievements of scientific and engineering progress, and improvement in organizing production and labor—these are the basic directions for USSR Minugleprom's activity and of enterprise collectives toward successful completion of current five-year plan tasks and preparation for the 13th Five-Year Plan.

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Deputy Gas Minister on Sector's Development, Prospects

18220171 Moscow GAZOVAYA PROMYSHLENNOST in Russian No 6, Jun 89 pp 3-4

[Article on report by V.V. Sheremet, first deputy minister of the gas industry, at a meeting: "The Real Reserves of Planning"]

[Text] **The first deputy minister of the gas industry, V.V. Sheremet, offered for the attention of the meeting participants data on the sector's development during the 3 years of the current 5-year plan and characterized the prospects for further increase in the capabilities of the country's gas supply.**

In addition to this, comprehensive refining of oil and gas raw materials will be developed, hot-house construction will be expanded, and gasification of the non-chernozem zone will be expanded. Significant renovation is also expected in the sector's machine building, aimed at producing a diverse assortment of goods for the population, spare parts, accessories and industrial parts for the sector's needs.

The speaker devoted chief attention to the problems and methods of improving the technical and economic indicators of gas industry facilities being planned today and in the near future.

Results of an examination of the plans show that the sector's planning institutes are slowing in raising the technical and economic levels of the plans they are drawing up, and the technical and economic substantiations and calculations for construction of sector projects. Plans are often returned due to their insufficient elaboration.

It happens that they reflect ineffective volume-layout decisions, poor preparation of questions of thrifty expenditure of material and technical resources, unsatisfactory organization of construction, and insufficient optimization of transport schemes of freight delivery.

Designs correspond little to the current requirements of scientific and technical progress in relation to decreasing material consumption and incorporating new forms of maintenance servicing. We are not taking full advantage of the effect of constructing in one engineering passageway multiflow systems of gas mains, calling for a reduction in the number of servicing personnel.

In planning the industrial DKS [Booster Compressor Station] at the Urengoy Field, the All-Union Scientific Research and Planning Institute of Gas Production [VNIPIgazodobycha] did not take into account that the comprehensive gas treatment plant [UKPG] and the DKS located on adjacent areas had to be considered a single technological complex with common engineering and structural support. As a result, the plan for the DKS unjustifiably duplicated a number of facilities of the UKPG.

Overstating the estimated cost of construction is becoming a critical chronic shortcoming of the sector's economics, especially under the influence of the transition to contract prices. As a result of overstating the estimated cost in the technical and economic substantiation stage (the Yamal-Povolzhye gas main), the contract price was unjustifiably overstated by 25 million rubles against the estimated cost of construction.

The speaker cited shortcomings typical of the planning institutes: deviating from existing normative documents when drawing up POSes [expansion unknown]; mistakes in determining the length of construction of projects; lowering the productivity of line flows; increasing the need for basic construction vehicles and machinery; unjustifiably including in the plan projects not pertaining to it. Thus, in the technical proposal for construction of oil fringes at the Urengoy Field, various production bases amounting to more than 40 million rubles were included. At the same time, according to the approved construction title of this field, bases called for by the plan and costing more than 300 million rubles are not being erected.

Another aspect of the problem that does not contribute to building facilities with high technical and economic indicators is the low technical level, compared to the world level, of pipes, gas compressor units, equipment, monitoring and control computer systems, and other equipment being delivered by domestic plants.

The ministry is seriously concerned with the increase in the unit cost of basic production equipment being delivered by the machine building ministries given the inadequacy of the technical and economic advantages being received by the production associations. Thus, an analysis of the cost of the gas compressor units [GPA], dust catchers, and equipment for air-cooling of gas being used showed an increase in cost compared with 1980: 12 percent for the GPA-Ts-16; 17 percent for the GPU-10; 26 percent for the GTN-16; 34 percent for the GTN-25; 35 percent for the GTK-10; 46 percent for the STD-12500; 38 percent for the dust catchers; and 43 percent for the AVO [air-cooler].

From what has been said, one should draw a conclusion about the weak position of the sector's scientific research organizations, which are not working actively enough with the planning and design organizations of the machine building ministries and their manufacturing plants. One should also note the sluggishness of planning institutes, which are not persistent in making timely demands of scientific subdivisions of the sector and suppliers to develop new production processes and manufacture highly efficient equipment.

The speaker also noted a significant shortcoming such as the scientific subdivisions' untimely issuance of production regulations and basic requirements for working fields.

The sector's scientific research subdivisions still are poorly involved in working out planning designs and do not use all the capabilities of implementing their developments in the planning stage. The initial experience of strengthening the ties between science and production based on appointing chief scientific supervisors for the most important projects, in particular for developing Yamal, pointed out the potential opportunities for improving the technical and economic indicators of projects with the direct participation of science in the planning process.

Critically analyzing the contribution of the Soyuzgazavtomatika Scientific Production Association and the Scientific Research Planning Institute of Automated Control Systems of Gas Transport to the planning of comprehensive automation of facilities for extracting and transporting gas, the speaker noted that it was insufficient. Costs for automation of facilities are increasing, but they are not resulting in a noticeable reduction in the number of servicing personnel, an increase in labor productivity, or an increase in the operating reliability of the facilities.

It is impossible to increase the technological level and quality of projects and significantly improve the economic indicators of the facilities being built without the active involvement of the customer-associations. The role of the customers in selecting plan designs is now insignificant. In the speaker's opinion, the customer should be responsible along with the author of the plan for the technical level and the extent of economy of the

plan designs, and to do this there must be constant contact between the customer and the planners in all stages of the plan development. V.V. Sheremet further expressed the thought of establishing a procedure for protecting the plan not only by the planners but also by representatives of customer-organizations.

Characterizing the role of the central apparatus of the ministry in resolving a number of issues concerning increasing the technical and economic level and quality of plans, he noted that the staff of the sector is not sufficiently active. Competitive forms of planning are still being poorly used; the technical level of plans are not being fully analyzed; and approved progressive indicators of assessing the quality of plans are often not reflected in the planning assignments.

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Reader Concern over Nuclear Waste Dump Answered

18220217 Moscow TRUD in Russian 30 Sep 89 p 4

[Reply to reader's letter by V. Vedmederya, executive director of the Kharkov informal organization "Ekoforum": "The Level of Radiation is not Dangerous"]

[Text] *A burial site for radioactive waste is located in Kharkov Oblast. Isn't this dangerous for the inhabitants of neighboring oblasts? My doubts arose after they said on the television program "Vzglyad" [View] that not one of the country's dump sites guarantees radiation safety. (L. Klysh, Sumy Oblast)*

V. Vedmederya, executive director of the Kharkov informal organization "Ekoforum," provided an explanation:

The fate of this burial site upsets everyone. No less than 1,000 enterprises from Kharkov, Poltava and Sumy oblasts send their radioactive waste here. In early September, an inspection raid was carried out at the site, located near the village of Peresechnaya, outside of Kharkov. Along with employees of the service for radiation safety of the oblast sanitary-epidemiological station, representatives of the nature protection society, the local soviet, the press, and local inhabitants participated in it.

The check showed that the residents of the village, as well as those of neighboring oblasts, have nothing to worry about. Instruments at the dump site registered a radiation level of 14-19 microroentgens/hr (within the natural limits). As it was explained, methods are used in burying the waste which eliminate its spread into open areas or ground water. Contamination is only possible if the dump were subjected to a direct hit from a powerful bomb or a meteorite.

There is still one complaint for the directors of the Kharkov Interoblast Specialized Combine of the Ukrainian Ministry of Domestic Services. The laundry which washes the protective clothing of the personnel who work with the waste is located in the very center of a thickly populated rayon, the housing complex of the Kharkov Tractor Plant. Undoubtedly, it should be moved away from the residential area.

ELECTRIC POWER GENERATION

Scientists See No Alternative to Nuclear Power

18220215A Moscow ENERGETIK in Russian No 9, Sep 89 p 14

[Article by Doctor of Engineering Sciences T. Kh. Margulova and Candidate of Engineering Sciences I. S. Nikitina of the Moscow Power-Engineering Institute: "There Are No Alternatives to Nuclear Power"]

[Text] The world's nuclear power has been under intensive development in recent years, but not as much as had been hypothesized earlier. In 26 countries there are now 403 power units in operation, 222 under construction and 84 ordered. Another nine countries are undertaking nuclear-power development. Total capacity of the world's nuclear power stations was (in gigavolts): 24 in 1970, 79 in 1975, 149 in 1980, 266 in 1985, and 298 in 1987. Some countries, France for example, are generating the major portion of their electricity at AES's.

The USSR also is developing nuclear power. The main reasons for developing it are: the unevenness of distribution of power resources around the country, and the necessity for saving fossil fuels.

In recent years, however, especially after the accident at the Chernobylskaya AES, a negative attitude toward nuclear power has arisen on the part of a certain portion of the population. Thus in 1988 the necessity for and pace of development of the USSR's nuclear power were subjected to doubts in 1988 in the newspapers MOSKOVSKIYE NOVOSTI (Nos 2 and 7) and LENINSKAYA SMENA of 30 October 1988 (Gorkiy city). Not one of these publications considered that the catastrophe at Chernobyl had been caused exclusively by violations of operating parameters by operating personnel. This was recognized by all scientists connected with nuclear power, both in the USSR and abroad, including the leadership of MAGATE [International Atomic Energy Agency (IAEA)]. A. D. Sakharov's interview by the Gorkiy paper was entitled, "We Do Not Have the Right to Hold People at Risk." Why is this thesis associated only with nuclear power? For all of man's technical activity is associated with risk, mainly in the chemical, coal-mining and metallurgical branches of industry, on the railroads, and in air and water transport. In so doing, the publications were silent about the fact that nuclear power is ecologically cleaner than any other branch. The more so since many branches of industry do not take adequate steps to clean up harmful discharges. Moreover, the radiation background around TES's is always higher than around AES's, especially around TES's that burn coal (there are always radioactive components in

their ash), as well as shale, whose ash contains from 10 to 100 grams of uranium and radioactive potassium per ton.

At nuclear power plants discharges of polluting (or radioactive) water into water bodies is ruled out, while at the same time industrial enterprises make such discharges to a greater or lesser extent, polluting such full-flowing rivers as the Dnepr and the Don.

Opponents of introducing nuclear power speak about the need for developing energy-saving technologies and the technical modernization of fossil-fuel fired TES's. All this should actually be done, but the scale of these measures cannot replace the contribution of nuclear power. Some authors propose to bring into the USSR's European area dehydrated and enriched fuel mined in Siberia (for example, Kansk- Achinsk coal), forgetting that this extremely expensive proposal requires, first, an appropriate industry at the site of the coal mining, and, second, it cannot be realized, given the loaded conditions of rail transport. Such estimates have long been made by USSR Gosplan.

Earlier it had been proposed that the rate of AES introductions be revised and that the necessary increases in reliability and safety of existing and newly introduced AES's be ensured. For this purpose, in particular, high quality must be strictly provided for at all stages: design (with unconditional completion of the design prior to the start of assembling operations), manufacture of the equipment (with timely and comprehensive delivery), installation and overhaul; and operation in full correspondence with the established technical regulations and observance of all the required instructions must be ensured.

Unfortunately, in past years of "large-scale" AES construction, these indisputable requirements, it would seem, had not been adhered to, as testified to in the interview of Soyuzenergomontazh [All-Union Trust for the Installation of Power-Engineering Equipment] head A. I. Kovshov by the journal, ENERGETICHESKOYE STROITELSTVO [Power-Engineering Construction] (No 7 for 1988).

Reduction of the pace of introducing AES's will enable the enumerated requirements to be met. One cannot concur with Academician A. D. Sakharov, who considers that the surface siting of AES's everywhere (even internationally) must be prohibited. The underground siting of AES's is not only unrealistic but it is dangerous, since many worker operations will be hampered and, the main thing, reactor accidents can be provoked by uncontrollable propagation of radioactivity through ground water.

All the powerful AES's operating in the world are surface sited, consequently it is necessary to work on increasing their safety and reliability, not on trying to hide them underground.

An important element of nuclear reactor safety is the principle of multiple "barriers." For VVER [water-cooled water-moderated power reactors] type reactors such barriers are the cladding of the fuel elements, a closed reactor loop, and a containment shell. In case of breakdown of any element, at least two barriers that protect the environment from discharges of radioactive substances from the reactor core will remain. Existing RBMK [uranium-graphite type channel reactors] type reactors (which were installed also at the Chernobylskaya AES) do not meet this requirement, so construction of them has ceased.

In modern reactor systems, an instantaneous increase in reactivity, which leads to a sharp rise in power, should, independent of the actions of the personnel, be quickly stopped automatically by the safety equipment, which has been prepared in the form of three independent systems, each of which is designed for 100 percent, systems that are related to maximally conceivable accidents.

Work is now being done to create reactor systems that will satisfy these requirements. IAEA General Director R. Bliks indicated in an interview with the newspaper PRAVDA that the risk for nuclear power stations is least and ecological purity is greater than for any other industrial enterprise or type of transport.

It should be said in conclusion that solution of the AES construction problem has international implications. For example, Austria borders on six countries—Italy, the FRG, Czechoslovakia, Switzerland, Hungary and Yugoslavia. Nuclear power is being developed in all of these countries, so Austria's refusal to start up a finished first AES, in accordance with a referendum of 1978, does not prevent the effects of nuclear power on its population. Moreover, in direct proximity to Austria is such a country as France, where AES's produce up to 80 percent of all its electricity.

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Scientists Deplore Electric Power Waste

18220205 Moscow SOVETSKAYA ROSSIYA in Russian 12 Sep 89 Second Edition p 2

[Interview with Valentin Semenovich Sheplev, senior scientific associate of the Institute of Geology and Geophysics of the Siberian Division of the USSR Academy of Sciences, by Vladimir Denisov: "The Tragedy of Wastefulness—A Siberian Scientist Reflects on Power-Engineering Strategy"]

[Text] *I got acquainted with Valentin Semenovich Sheplev in a sharp and dramatic discussion of the draft plans for the Katun and Chemal GESs [hydroelectric power plants]. The session of the expert commission was at its height when he went up to the rostrum. In the five minutes allotted for the presentation he set forth in concise fashion the collective viewpoint of the public ecological laboratory that has been in operation for four years now at the*

Novosibirsk Akademgorodok. The presentation was distinguished by its constructive nature and search for alternatives for solving power problems. That is what today's conversation is about with V.S. Sheplev, senior scientific associate of the Institute of Geology and Geophysics of the Siberian Division of the USSR Academy of Sciences.

[Sheplev] The draft plans for the Katun GES were turned down at a meeting of three expert commissions. This was a great triumph for common sense. Our public ecological laboratory supports this decision entirely.

A brief history of its appearance. Four years ago a small collective of scientists at Akademgorodok, alarmed by the design engineering for the Katun GES, decided to conduct public expert scientific analysis, since the construction project affected a priceless and, perhaps, the last untouched corner of our planet. Many specialists from Moscow, Leningrad, Kiev, Biysk, Barnaul and Nukus unexpectedly took part in the expert analysis on a voluntary basis. It became clear in the course of the discussion that it was almost hopeless to criticize without an alternative version. We proposed the creation of underground or surface coal-gasification plants, the scrubbing of the gas and its use either directly for power gas turbines or its conversion into methanol fuel and its combustion at power-engineering installations at the site of consumption. There were other versions as well. We also tried to consider the overall state of power resources.

[Denisov] The discussion then clearly concerns not just the Katun GES, but the development of our power engineering overall?

[Sheplev] The Katun GES really cannot be considered outside the overall situation or the problem of power wastefulness in particular. The then-deputy chairman of the USSR Council of Ministers, B.Ye. Shcherbin, noted that "Over the last 15 years the fuel potential of the country has tripled, but the production of electric power has increased by 5.3 times." Compare that with what M.S. Gorbachev said at the February (1988) Plenum of the CPSU Central Committee: "If we cleanse the economic growth indicators (of alcohol-related rubles and petrodollars—V.Sh.), it turns out that for the span of effectively four five-year plans we have not had any increase in the absolute growth of national income, and it even began to drop at the beginning of the 1980s."

What is happening? It has been shown in practice overseas that an industrially developed country can move forward without increasing its consumption of fuel and power resources. Japan has doubled its gross national product over the last 7-10 years at effectively the former level of consumption of power resources. Hungary has had analogous results. Less power is being consumed in the United States today than in 1973, while the gross national product is 1.35 times greater. Let us evaluate how much fuel we need with reference to the levels that have been achieved around the world. The gross national product of the USSR was 0.87 trillion rubles in 1987, and 2.6 billion tons of standard fuel were consumed (allowing for exports). Some 3.2 kg [kilograms] of standard fuel were thus consumed per ruble of output. The gross national product of Japan is equal to three trillion dollars, and 0.6 billion tons of standard fuels were consumed, i.e. 0.2 kg per dollar. We will not convert dollars into rubles, but it is clear that the gross national product of the USSR is at a minimum no more than Japan's. Whence it follows that 0.6 billion tons of standard fuel are in principle a sufficient level of consumption for us. Everything over that is a measure of backwardness in scientific and technical progress, structural imperfections in the national economy, a measure of wastefulness and... is our potential reserve.

[Denisov] Valentin Semenovich, let us recall then that the power-engineering program proposes the further augmentation of the production of all types of energy...

[Sheplev] Yes, and now Japan and the United States intend to reduce the energy-intensiveness of national output more and more. And only the Soviet Union is methodically increasing its fuel potential. And the excess over, say, Japanese consumption is already almost two billion tons of standard fuels. So utilized with intelligence, it could provide a quantity of electric power 1,200 times (!) that of the power from the planned Katun GES. So if we were to cover just one twelve-hundredth of the way on the essential path of resource conservation, the Katun Plant would be unnecessary. If we covered one fortieth of that path, all of the GESs on flatlands rivers would not be needed, another fiftieth and all the nuclear power plants would not be required. I would add that a ton of fuel conserved is considerably cheaper than a ton produced.

And can we really be reconciled to the fact that the gas produced in Siberia goes to Europe instead of Russian, Ukrainian and Belorussian cities and towns? It is felt that it is too expensive to deliver gas and oil here, and nuclear power engineering is thus being developed rapidly in the European part of the USSR. But it's not too expensive to go through the European part of the USSR to Western Europe—Austria, West Germany, France, Italy, now to Sweden and the more so to Turkey? They are laying enormous pipelines and second, third and subsequent lines on them...

Meanwhile Sweden, Austria and Yugoslavia—and even Italy, which depends 83 percent on fuel imports and produces 1.7 times less electric power per capita than the USSR—all of those countries intend to close their AESs [nuclear electric power plants]. Soviet gas works miracles in general: AESs go out where it appears.

Here's something else that we cannot fail to dwell on. A thousand kilometers of trunk gas pipeline cost roughly a billion rubles. And many tens of thousands of kilometers of them have been laid. Enormous amounts of funds and material and human resources were expended to provide for the delivery of oil and gas abroad. And while that was

being done, a planned but for us unexpected price collapse occurred: prices fell by 5-6 times over a brief period.

[Denisov] All right, let's say that you have convinced everyone with this data. What alternatives are there for comparison?

[Sheplev] Power wastefulness determines first of all the strategy and tactics of resource conservation. An enormous quantity of fuel could be economized today, after all, with small investments or else without any at all. Then we have to engage in the improvement of technologies, and later in structural changes in industry.

The public ecological laboratory has compiled a menu of technologies that could be utilized even using today's equipment. I will digress a little. When the energy crisis unfolded around the world, the most diverse methods of conserving fuels were considered. A computer has calculated that lighter motor vehicles and insulated walls in housing are needed first and foremost. Motor vehicles here are an order of magnitude smaller than in the United States, and that means that overall fuel consumption differs. But the insulation of housing is the issue of issues. The exactly opposite trend has been observed here over the last 20 years—the thermal insulation of homes has decreased by 40-50 percent. This signifies the loss of hundreds of millions of tons of standard fuels... The Dutch ambassador in the 15th century, seeing that the soldiers on night duty in Moscow warmed themselves at bonfires arranged at crossroads, reported that the Russians were heating the streets. He could assert the same with complete justification today.

The fact that the overconsumption of energy in ferrous metallurgy exceeds the output of all nuclear power plants was recently made public. But that is, after all, only a small part of the total losses. "The responsibility of Soviet metallurgists is very great, and they should make every effort to make restructuring a reality in the steel industry." It seems to be a the quote from a decree of our directive bodies. But this was written by Japanese specialists in the realm of power engineering.

Here is what must be resolved: either strain yourself in a search for newer and newer sources of fuels, trying in vain to plug the "black holes" of wastefulness, or else take the path of the thrifty consumption of energy at last. I think the answer is clear.

[Denisov] What alternative technologies, in your opinion, are the most preferable ones today?

[Sheplev] There is naturally no single "link" that we can seize upon to right matters. When our laboratory was occupied with these issues, we sifted through mountains of literature, and the logic of the search led us back to the 1960s, 1940s and even the 1930s. We found to our astonishment how much had been done by our scientists back when they worked with such effectiveness and selflessness, how many interesting ideas were born. I think the country was ready for a new technological spurt by the beginning of the 1960s, but for reasons that must still be investigated the most advanced technologies were rejected and the orgy of wastefulness began.

It is especially distressing to see the delays in the incorporation of such innovations in their time as gas turbines or the method of underground coal gasification. The latter was proposed by D.I. Mendeleyev. V.I. Lenin had a high regard for his invention. The merits of the method are obvious: work underground is eliminated, energy from gas is ecologically clean, all of the ash also remains underground, as does the major portion of the sulfur... Practical and scientific works were done and the foundations for the Podzemgaz plant, where the technology was being worked out, were laid in the 1930s under the guidance of S. Ordzhonikidze and Academician A. Terpigorev. Some of them supplied enterprises for the whole war. Plans for high-capacity Podzemgaz plants with a productivity of up to 18 billion cubic meters a year were drawn up at the end of the 1950s. The cost of the gas was surprisingly low.

And then, when all of the work had been done, Academician Terpigorev was removed from the leadership and the Glavpodzemgaz Administration was dissolved. No one except foreigners displayed any interest in the method for many long years. An American firm procured a Soviet license and quickly carried out the work to incorporate it... And the method of underground gasification drags out a miserable existence here.

I mentioned gas turbines as well. Every effort was made as early as the 1960s for their widespread incorporation. Gas turbines, as opposed to steam ones, have a very high reserve for raising their efficiency factors. We note among others the advantages of markedly less materials- and capital-intensiveness and the possibility of quick start-up. Professor V. Uvarov had developed a turbine with a capacity of 200 megawatts and an efficiency factor of 42 percent. Combined installations with steam turbines had been studied. P. Poletavkin had suggested an efficient method for increasing the capacity and efficiency factors of gas turbines with water injections between compressor stages. There were impressive suggestions for cooling turbine blades that would permit a rise in temperatures in the combustion chamber and bring efficiency factors to 60 percent. Today, 20 years later, matters in the realm of the utilization of gas turbines are unsatisfactory both in efficiency factors and in unit and total capacity. They are employed chiefly for the pumping of gas abroad. Gas turbines have meanwhile been highly developed overseas. High-capacity power installations have been created in Japan whose efficiency factors were reaching 55 percent back at the beginning of the 1980s. The parameters moreover proved to be exactly the same as those that had been calculated by Professor Uvarov. Gas-turbine engines for motor vehicles that can use various fuels have been created.

I also cannot remain silent about wind power. Before the war this problem had been resolved widely and in serious

fashion. The works of Kondratyuk considered powerful installations of up to 12 megawatts. But wind power was effectively not developed afterward, and the advanced positions were lost. Only the Ostankino tower, the draft plans for which utilized Kondratyuk's ideas for creating the support for a wind installation, are reminiscent of the prewar developments. Less than two percent of production is devoted to so-called non-traditional sources of energy in the plans for the year 2000. This cause has been widely posed abroad. They are planning wind installations with a capacity of 21 megawatts in California alone by 1995 in the United States, and in Sweden they intend to produce 10 percent of all energy consumed by that same year.

Much has been forgotten, and you can't talk about everything. Whatever sector you take you find examples where old and wasteful technologies are being employed in place of new ones. We also cannot forget the losses in the electric-power grids. They total 4.5-5 percent abroad. Here they are 9 percent. But that is an official indicator. More is being lost in reality.

[Denisov] The outlines of a new power program have now been developed, it is being reported. Your collective evidently had some connection with its basic provisions as well?

[Sheplev] That program is being developed by a large number of organizations and has been widely covered in special and popular periodicals. A detailed energy equation is unfortunately still unavailable as before, and without it we cannot evaluate the efficiency of what is being proposed. I will thus limit myself to general considerations. An inventory of all prospective technologies, both those that have already been developed but not incorporated widely enough and those that are quite new, has been done, as they said. The technologies have been subdivided according to the degree of efficiency, ways of realizing them have been projected and the most important areas singled out. The impact would seem to be enormous: the realization of the program will make it possible to economize some 500 billion rubles of capital investment and 900 million tons of standards fuels by the year 2010 while freeing up some 8 million people. But I would like to note something else. Notwithstanding the incorporation of seemingly most advanced technologies, the production of power resources will again grow, from today's level of 2.6 billion tons of standard fuel to 3.7 billion by 2010, and then to 5 and some billion by 2030. The production of natural gas will rise sharply and nearly double by that time, and the quantity of nuclear electric power plants will increase by 9-11 times... Coal production is also planned roughly to double, and moreover with an increased share of the "most progressive" strip method. The export of fuels will decline somewhat in relative terms, but will grow markedly in absolute terms. Power from the wind, sun, tides and geothermal energy all together will provide 44 million tons of standard fuel by 2010—just 1.2 percent of all power resources produced.

It is in short incomprehensible where the efficiency of the whole gamut of new technologies is headed. The old program, after all, projected roughly the same values for the production of power resources, and it is moreover difficult to understand what this growth is being planned for from the published materials. And a thousand billion—a trillion (!)—rubles will be expended in its realization. The promised impact of 500 billion rubles should be understood thus: had there been no new technologies, this money would have been requested as well. This means that the financing of social development will be accomplished according to the remainder principle once again—the construction of housing, roads in Central Russia, the ugly-sounding Nonchernozem Zone, health care etc. The proposed sum is so enormous that there is nothing to compare it with, as the direct material cost of the Patriotic War was 679 billion. But tell me, can the country both wage war and successfully resolve social problems?

In conclusion I would like to say something else. They have become accustomed to a stereotype at Minenergo [Minister of Power and Electrification] and at the planning bodies: if some region needs power, let's build a thermal plant, GES or AES. The agencies, without addressing the new technologies, are putting the country into a dead-end situation without alternatives.

[Denisov] The chief cause of this approach has been mentioned more than once: the agencies are monopolies and thus have no vested interest in changing the situation, and it cannot be changed, they say, without competition. Is that the whole problem?

[Sheplev] I am not a specialist and will not take it upon myself to judge this aspect of the matter profoundly. One probably cannot fail to agree with such assertions. But I would like to recall the experience of the Great Patriotic War. When an assignment was given, say, to create an aircraft, 3-4 different design bureaus took it up. The problem was resolved in brilliant fashion in their dispute, in their healthy competition. Note, that was under the conditions of an administrative-command system, and what a command and what an administrative system! Here is what is startling: in the war the Soviet Union poured a third of the steel of Germany on average, as well as a third of the cast iron, while 2.3 times less electric power was generated and 5 times less coal was produced. We surpassed the enemy only in the production of petroleum at 1.4 times more. And yet we were able to manufacture more aircraft, tanks, guns and mortars than Germany. This is an example of the stupendous efficiency of our economy in an extreme situation. Everything is unfortunately going the other way today. I would draw only one conclusion from what has been said: wastefulness is in no way typical of our country, as some are trying to convince us.

New Equipment Reduces Pollutants from Thermoelectric Plants

18220216 Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 28 Sep 89 p 2

[Article by I. Monakhova: "The Clean Air of the Capital"]

[Text] The Belozersk Power Mechanics Plant has currently mastered series output of equipment for a new type of boiler with improved ecological characteristics for thermoelectric mains. The new method of burning fuel in such boilers was tested at a number of thermoelectric mains of "Mosenergo" and "Kievenergo." The amount of nitric oxide emissions from boilers with the new equipment was reduced 25-30 percent.

Installation of this equipment is currently being finished at several of the TETs [thermoelectric mains] in Moscow. Industrial use of the boilers will begin after they are tested.

"For a TETs which operates mainly on gas, nitric oxide is the basic component of harmful emissions," says chief engineer of Moscow TETs-16 A. Piskarevskiy. "The combustion system which we are installing at one of the boilers will allow us partially to cut back the formation of nitric acid while burning fuel. Depending on the results, in the future we will be able to reconstruct the remaining hot water boilers. In connection with the proposed adoption of the law requiring enterprises to pay for harmful emissions, we are interested in improving our ecological indicators."

Association to Study Nontraditional Energy Sources Created

18220001 Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 14 Oct 89 p 1

[Article by V. Burenkov:"The 'Geliobioterm' Association"]

[Text] The problems in the use of nontraditional energy sources excite the whole world. Our country's interest is also being aroused. On the initiative of the Kazakh SSR Council of Ministers and Kazakh SSR Gosplan the republican association "Geliobioterm" has been created. More than 20 different enterprises are joined in it. Economists and scientists have reviewed and confirmed a set of urgent measures. The "Kazselkhozmekhanizatsiya" MPO [not further identified], the "Nitron" cooperative, several sovkhozes, and other enterprises and organizations are seriously studying nontraditional energy sources.

Books on Nuclear Power for Layman To Be Published

18220202 Moscow IZVESTIYA in Russian 2 Sep 89 Morning Edition p 2

[Interview with German Malkin, chief editor of Energoatomizdat, by A. Illesh: "What We Do Not Know about Nuclear Power"]

[Text] The vacuum of public information about urgent problems in nuclear power engineering is starting to be filled: The Yadernaya Energoatomizdat [Nuclear Power Engineering Publishing House] is preparing to publish a series of books much needed by the general reader since Chernobyl.

It would seem strange to ask what we know about AESes. Yes, the tragedy in 1986 stirred up public opinion not only in our country but throughout the entire world. Today from everywhere where AESes or ASTs [Nuclear Heat Supply Plants] exist or their construction is being planned come reports of protests by the local population, associations of ecologists and "Greens." However, there is still very little specific, objective and precise information about designs, operating principles and safety levels at nuclear power facilities.

The dispute between specialists and the public is not one between equals. There is an acute shortage of literature for a wide circle of readers. It is very important that there be a discussion about pathways for the development of nuclear power engineering in the USSR. Because of this, the appearance of the book *Chto takoye AST* [What is an AST] is an important event.

Just what are Energoatomizdat's plans to technically educate the public? This is an organization capable of moving, from its present position at top dead center, the question of informing the public about the future of nuclear power engineering. German Malkin, chief editor at the publishing house, explains:

[Malkin] Really, the Chernobyl tragedy was an impetus for the complete rejection of nuclear power engineering. However, hydroelectric and thermal electric stations are also being criticized. It must be admitted that having lost the initiative, specialists are now badly on the defensive. I have publications in mind. Other countries are encountering similar problems. This, in particular, is discussed in the book *My Radioactive Garden* by Lord Marshall of Goring, chairman of Great Britain's Central Electric Generating Board, soon to be published by Energoatomizdat. You are correct; help in starting an intelligent dialogue between specialists and the public is one of the most important tasks for this publishing house.

[Illesh] In this instance what specifically will be obtained by a reader interested in the facts?

[Malkin] In the immediate future we will publish these books: *Atomnaya energiya v nashey zhizni* [Nuclear Power in our Lives] by V. Ivanova and U. Marguliz;

Radioaktivnyy veshchestva i chelovek [People and Radioactive Substances] by L. Buldakov, *Energeticheskiy kompleks SSSR: razumnyye alternativy* [The USSR Energy Complex: Intelligent Alternatives], edited by A. Makarov; *Pamyatka po zashchite naseleniya* [Memorandum in Defense of the Public] by Yu. Grigorev, and several other books. A wide circle of readers will be interested in the view of the development path for nuclear power of the noted Swedish scientists S. Kullander and B. Larsen presented in the book *Sweden after Chernobyl.* The publishing house also has an editorial council section working on the ecological problems of traditional power engineering. I hope that in the immediate future the reader will have books on these questions...

[Illesh] Why "I hope"? Is something delaying them?

[Malkin] To publish a book today does not mean that readers will obtain it: Much depends upon the book trade. There is a paradoxical situation here. Thus, the Arkhangel Knigotorg [Book trading organization] did not order a single copy of *Chto takoye AST*, and this in a city where people are fervently discussing problems in the construction of a nuclear heat supply plant. We also encountered a similar situation in printing the book Rukovodstvo po organizatsii meditsinskoy pomoshchi pri radiatsionnykh avariyakh [Guide for Organizing Medical Assistance in Radiation Accidents] edited by the well-known doctor A. Guskovaya, when Belorussian Knigotorg only ordered 710 copies. Really, does anybody have to be convinced how important it is to have medical assistance in the republic after the Chernobyl tragedy?

[Illesh] In the press—newspapers, and even thick journals—there are now several pointed, disturbing articles by eyewitnesses or participants in the Chernobyl accident and the clean up. Now that it has become possible, journalists generally are loudly and with good reason criticizing nuclear power. Its defenders are also finding it possible to publish their ideas. Has it not occurred to you to publish different viewpoints in a single book and thus make it possible for the reader to decide whom to believe?

[Malkin] Our plans were (and I have still not lost hope) to publish such a collection which would reflect various opinions. But surprisingly, I have not received a single answer to a proposal sent to 40 addresses (including publications and journalists whose writings are frequently, and most importantly, harshly critical of nuclear power plants). Undoubtedly, today it is essential that there be a compendium of newspaper and journal publications pointedly and urgently raising questions about power plant safety, the effect of radiation upon man and nature, and the difficult situation facing evacuees, or those who still plan to evacuate. These would be published together with the answers specialists can give.

However, it is still difficult to have the argument in one book: the scientists are ready, but the critics are apparently not so very ready.

AUCCTU Deputy Chairman Discusses 25 Sep Presidium Session

18280290 Moscow TRUD in Russian 27 Sep 89 pp 1-2

[Report of TRUD interview with Deputy Chairman of the All-Union Central Council of Trade Unions I.Ye. Klochkov: "To Business—Without Distractions"]

[Text] **A regular session of the AUCCTU [All-Union Central Council of Trade Unions] Presidium took place on 25 September. As always the editor had planned to publish an account and set forth the essence of the decisions reached. And what about trying at the end of the session to talk with some competent person and listen to his assessment of the measures outlined? And so at TRUD's request AUCCTU Deputy Chairman I.Ye. Klochkov shares his impressions.**

[TRUD] A first question, Igor Yevgenyevich: What was the fate of the documents that the AUCCTU 6th Plenum adopted? Among the people, they are being widely discussed but there has surely been more than their mere publication in TRUD?

[Klochkov] In the statements adopted at the plenum the trade union organizations were assigned the task of using all their rights, opportunities and forms of influence in order jointly to oppose price increases, intensify the struggle to eliminate the shortages of everyday goods, and achieve change in the consumer market.

A meeting of the aktiv in Leningrad took place last week, and then in Moscow, and very important decisions were reached. Unlikely as it may seem, neither of those meetings dealt with earlier "measures" recorded in the minutes! There were stormy debates, sharp discussion, specific proposals. The local organs of power were given a package of demands and schedules for compliance with them were issued. It was stated in no uncertain terms that depending on the response from the authorities, the trade unions would reserve for themselves the right to devise further measures to protect the legitimate interests of the workers. You will agree that the decisions of the AUCCTU plenum were not simply supported at the local level. They were taken up as weapons.

[TRUD] And are the government and the USSR Supreme Soviet aware of the AUCCTU statements?

[Klochkov] Right from the start it was decided that the plenum documents, first and foremost the AUCCTU statement on socioeconomic problems, must be immediately passed on to the leaders of the all-union legislative and executive organs of power to which they were addressed. But the Supreme Soviet was in the middle of the parliamentary break and the head of the government was also on vacation.

Recently—well, to be accurate, on 20 September at the end of the work of the CPSU Central Committee plenum—the chairman of the USSR Council of Ministers N.I. Ryzhkov and the AUCCTU chairman S.A. Shalayev met in the Kremlin. Nikolay Ivanovich has carefully studied not only the documents of that plenum but also the draft resolutions that we drew up for the USSR Council of Ministers, and he issued an urgent assignment to prepare an appropriate decision with specific measures on the matters raised in the AUCCTU 6th Plenum statements "On Price Increases, Shortages of Goods, and the Living Standard of Soviet People" and "On Distortions in the Cooperative Movement."

On the following day, 21 September, S.A. Shalayev met with the first Deputy Chairman of the USSR Supreme Soviet A.I. Lukyanov, who had been given the statements of the AUCCTU 6th Plenum and our appeal to the USSR Supreme Soviet (in the form of a legislative initiative). Under the chairmanship of M.S. Gorbachev the USSR Supreme Soviet Presidium reviewed the AUCCTU statement. A resolution was adopted on the matter, which assigned the commissions and committees of the Supreme Soviet to study the problems raised in these documents and to submit appropriate proposals for consideration by the USSR Supreme Soviet. The Presidium resolved to pass the statement to USSR people's deputies.

On Friday 22 September, when the Council of the Union Labor, Prices and Social Policy Commission together with the USSR People's Control Committee discussed ways to eliminate the shortages of goods, the deputies supported the AUCCTU plenum statement that proposed a "freeze" on retail prices for the main kinds of consumer goods and that a price ceiling be established for fruits and vegetables, and that in the coming months the shortages of food for infants, detergents and a number of other goods be eliminated.

In short, last week the AUCCTU plenum documents had already started "to work," and formed the basis of specific actions by the government, the Supreme Soviet, and the trade unions at the local level. Those attending the session of the AUCCTU Presidium session were informed of this. And the next steps were worked out. For example, an assignment was issued to draw up proposals on procedure for reviewing and agreeing the most important socioeconomic questions at joint sessions of the Council of Ministers Presidium and the AUCCTU Presidium.

[TRUD] Joint meetings with the government? But there have never been such things...

[Klochkov] Yes. We have no experience of this. But you will agree that we must also put this form of struggle in the armory of the trade unions in the interests of the workers. Indeed, we do have experience of joint sessions of the presidiums of the central committees of sector trade unions and ministry collegiums, and they have shown their effectiveness; so now it is time to take yet one more step.

[TRUD] Obviously the ideas and documents of the AUCCTU plenum should become the subject of attention in state organs not only at the all-union level but also at the republic level, should they not?

[Klochkov] Undoubtedly. The republic trade union councils have been assigned by the Presidium to pass on the AUCCTU statement to the all-union republic councils of ministers and to try to achieve adoption of the necessary measures in matters concerning pricing, eradicating speculative distortions in the cooperative system and so forth. In addition we are now sending to the all-union republic supreme soviets a letter from the AUCCTU. We are proposing in particular that when the laws on elections to the republic and local organs of power are reviewed, provision be made for the need to form electoral okrugs not only on the territorial principle but also the production principle. Otherwise, as the experience of the last elections has shown, it is difficult to insure proper representation for the working class and the laboring peasantry in the organs of soviet power.

[TRUD] And who will be raising this issue with the RSFSR [Russian Soviet Federated Socialist Republic] Supreme Soviet?

[Klochkov] A legitimate concern. The lack of many organs in the RSFSR that exist in the other all-union republics is, to say the least, unfair. Accordingly, the AUCCTU plenum supported a proposal to set up an RSFSR trade union council. The Presidium approved the makeup of an organizational committee that during the first quarter of next year is to hold an All-Russian trade union congress.

The organizational committee includes workers, brigade leaders, trade union committee chairmen, and representatives of the sector trade unions and the inter-union trade unions. But the AUCCTU will as before defend the interests of the trade unions in the RSFSR.

[TRUD] What is it planned to do with respect to the proposals and criticisms from those attending the AUCCTU plenum that were not reflected in the documents?

[Klochkov] A list of 145 such proposals and comments has been compiled. The Presidium has assigned the AUCCTU Secretariat and the commissions and individual working groups the task of reviewing all this and adopting within the month the necessary measures, and of informing each person who offered a proposal.

The Presidium has approved a plan for organizational measures to implement the plenum's main document—the resolution "On the Present Situation and the Urgent Plans of the Trade Unions." We have already touched on many of the points in this plan, so let me talk briefly about just a few of them.

It has been decided, in particular, to draw up a concept for the activity of the trade unions under the conditions of developing regional cost accounting and to prepare proposals for consideration by the AUCCTU Presidium. To this end a working group has been "given its head" for 3 months—time waits for no man.

We have entered the period of direct preparations for the next trade union congress. It is already clear that one of the most important actions of the congress will be to adopt a quite new edition of the Charter of the USSR trade unions. Or perhaps some other document of an essentially new mature that regulates the interrelationship and cooperation between the trade unions in our country. It is common knowledge that the AUCCTU plenum confirmed the makeup of a commission to work on a draft Charter. And now, we in the Presidium have agreed on the need to prepare alternative versions of this draft, and there may be three or even four versions.

The collective contract is now becoming a very important tool in the way that the primary trade union organizations fulfill their function of protection at the state enterprise; such was the conclusion of the AUCCTU plenum. In the weeks immediately ahead a start will be made on the preparations to conclude collective contracts for next year. The Presidium decided to send the trade union organizations its own letter of appeal and to emphasize once again the need to achieve maximum inclusion in collective contracts of measures aimed at improving all the social parameters in the life of the labor collective, and to insist that they be financed by assets generated by the collective itself.

An AUCCTU Presidium commission for student affairs has been set up, headed by the rector of the Leningrad Institute of Aviation Instrument Building, member of the AUCCTU Professor A.P. Lukoshkin.

[TRUD] It is difficult to recall a session of the AUCCTU Presidium since the 28th Congress of USSR Trade Unions at which questions concerning the life of the primary trade union organizations have not been considered in one way or another...

[Klochkov] At the 25 September session the Presidium took one more step to "emancipate" the primary trade union organization from the diktat of higher organs. Now the "primaries" have the right to establish for trade union committee and shop workers that do trade union work in their spare time (note: not only the chairmen but all workers) payments of up to R80 monthly, regardless of their social position. And yet one more detail: Although the earlier condition still holds—not to spend more than one-third of total members' dues for this purpose—the "one-third" may be calculated as a whole for the enterprise (or association), establishment, organization, or kolkhoz. These are very important decisions for the primary organizations.

[TRUD] How do you explain the great attention that the AUCCTU Presidium is today paying to the information and propaganda tasks of trade unions?

[Klochkov] The Presidium has stated its firm position: It is essential to take urgent steps to improve the information provided for Soviet people about what specifically is being done to protect the rights of workers, how their interests are being represented in the government, what matters are being raised in the USSR Supreme Soviet, and what is actually being achieved.

In the struggle for the interests of the working man the trade unions have had successes and failures (temporary, I am sure). But the workers and rank-and-file trade union members know little enough of all this, and the situation can be tolerated no longer. We must make an end to this "information shortage."

It has therefore been decided first and foremost to organize steady sources of mutual information along the line of the center to the trade union, and to this end to set up information sections or press centers in each trade union council and sector central committee, and to equip them more quickly with personal computers and other up-to-date equipment to acquire, process and pass on urgent socioeconomic information to the AUCCTU press center, together with the reports that could be immediately offered to the editorial offices of mass media.

It is very important to use to the full the possibilities of Central television, radio, and the newspapers published in Moscow in order to provide information for the workers about our work. Of no less importance is the task of disseminating our material more extensively in the local mass media, including the rayon and city newspapers and large-circulation plant and student publications. Fine experience in this work has been gained in Ryazan, Smolensk, Belgorod and some other trade union councils, and we intend to make this experience generally available in the near future.

We already have the all-union radio journal PULS RABOCHEY ZHIZNI. We are making preparations for a series of television programs (one of them, on the results of the AUCCTU 6th Plenum, will be broadcast on 29 September at 1900 hours on Central television First Program). But the possibilities of TRUD and of the central sector newspapers have not been fully exploited; they should become the combat information tribune of the trade unions, a permanent channel for communication with the rank-and-file members of the trade unions. It has been decided to engage in real earnest in organizing the publication of republic trade union newspapers. We shall give every possible support to those trade union councils that have been trying to find reserves of paper at the local level and have already started to publish periodicals.

In short, we need an information breakthrough to the reader, the radio listener, and the television viewer. As a trade union member he will know more about his own organization and work more actively in it.

[TRUD] Are any noticeable changes to be seen in the style and methods of work by associates of the central trade union apparatus?

[Klochkov] The people who have been entrusted with the task of working in the AUCCTU apparatus in general are aware of the crucial nature of this present moment. The lights burn until late in the evening in the windows of the Palace of Labor. Members of the work-action and strike committees come to them for help. Members of trade unions who have exhausted all possibilities at the local level in order to find a fair way come to the council, and we work together. Recently (TRUD wrote about this), virtually in 24 hours, at the demand of trade union central committees supported by the AUCCTU, a decision by government organs was rescinded and the cement that had been taken from construction workers in the Minatomenergoprom [Ministry of the Atomic Power Industry] system was returned. In this way a work stoppage by 150,000 construction workers in the sector was prevented.

But many offices in the AUCCTU are deserted: about 200 associates have traveled out to the localities to give direct help in the primary organizations in effecting the sharp turn toward protecting the legitimate rights and interests of the workers and to free up the trade unions more quickly from direct participation in purely economic matters and from functions that strictly speaking are not theirs. We simply do not have the time for distractions.

Improving Technical Skills of Older Workers

18280287 Moscow MASHINOSTROITEL in Russian No 8, Aug 89 pp 31-32

[Article by V.V. Neugodov, candidate of economic sciences: "Introduction of New Technology Under Conditions of an Old Work Force: Contradictions and Ways to Resolve Them"]

[Text] We can single out insufficient consideration of demographic factors in production renovation plans and primarily progressive aging of the work force at machine building enterprises among the causes of the still low rates of introduction of the achievements of scientific-technical progress into manufacturing. In the 1990's, according to our data, almost half of the machine building work force will consist of individuals who are between 40 and 59 years of age.

When machinery is replaced, workers must retrain or change profession, which frequently leads to a reduction in wage level. As a result, many personnel have a negative attitude toward the introduction of new equipment. Let me mention certain trends which have been noted recently. First, the direct "flight" of veteran workers from scientific and technological progress. For example, at the Novosibirsk Siblitmash plant, a shop with digital program control lathes with complete replacement of machinery was set up, based on a mechanical shop with universal equipment. As a result,

employment of older workers in primary positions was reduced from 27.8 percent to 6.3 percent (that is, by more than a factor of four) and the average age of personnel employed in the shop became the youngest at the plant. Second, the time periods for mastering new equipment in "old" collectives are slowing down significantly. Third, in some cases, veteran workers are completely incapable of mastering the new equipment most often seen in machinery and repair shops.

Among the causes of these phenomena one can single out the low education level of veteran workers, which impedes mastery of new types of equipment, reduction of adaptive capabilities, the lack of desire to once again become a student, to lose high social and professional status and salaries, and the limited time periods for future employment.

Reduction in adaptive capabilities for mastering the new is an objective result of aging. However, causes of an organizational and economic nature have also aggravated this natural process. Extensive development of the economy, increase of the machinery depot with the latest equipment, and its low replacement rates resulted in the fact that the work force acquired a "stagnant" nature and could function only in static production situations. Thus, the average age of equipment in the national economy is 26.5 years. This means that a worker who has entered the plant works on the same equipment practically until he reaches pension age. Naturally, neither enterprises nor workers themselves had stimuli (nor was there any point in developing) to develop adaptive capabilities for innovations under these conditions. According to our data, 5.2 percent of 40-49 year old workers and only 0.8 percent of 50-59 year old workers are thinking about increasing their education level.

A negative attitude toward innovations has also been formed with regard to the lack of broad use of a scientifically-based system of labor organization and incentives during the period of mastery, which reduced the incentive for mastery. In this manner, the dynamism of production is a very important factor which determines the capability of the work force in mastering new equipment. The prolonged period of years of not replacing production equipment is making the work force "stagnant" and unaccustomed to change and to the constant improvement of their capabilities. Moreover, this results in development of psychological tenets which are negative toward any innovations which violate the status quo. Combined with a reduction of adaptive capabilities in old age, this makes an older worker most conservative with regard to any changes. There is only one way to overcome this and to increase his capability to learn something new—create conditions under which he would improve his work capabilities and be constantly occupied with mastering new skills throughout his work life.

It is possible to improve the work force's adaptive capabilities for mastery of the new through two directions. First: constant changes in the technological basis of production. However, these changes must have a sufficiently global nature which impedes work force "flow." Otherwise, under conditions of an aging work force and reduction of the number of young people, the latter can turn out to be insufficient for providing personnel for new production. Furthermore, this appears to be a sufficiently active means for prevention of professional aging. Second: changes in professional functions. We need to create conditions so that a worker is not "tied down" in any one type of work for a prolonged period of time. In this context, development of collective forms of labor in our nation can play a very positive role in forming a widely experienced worker, a worker accustomed to and who knows how to master new equipment.

It is also possible to employ the "block" method of study during training (retraining) of the work force under which a worker masters a number of related professions, thereby increasing the range of his capabilities and choices during replacement of production.

Besides, realization of the listed measures is only possible when the appropriate conditions and incentives have been created. This is primarily with regard to improving and supplementing general knowledge. Today it is really impossible to master new types of equipment without a secondary education. With regard to aging workers, this task must be resolved in two directions: by bringing them up to the required educational level and through remedial training in accordance with the obsolescence of the equipment. Unfortunately, the system of evening and correspondence schools, which to some degree facilitates leveling the educational level of the already working population, does not entirely insure remedial education of knowledge obtained earlier. Furthermore, it does not take the peculiarities of the older contingent into account. Economic incentives practically have no effect in arousing the interest of middle-aged or elderly people to improve or supplement their knowledge. Moreover, individuals who study without a break from production are being placed in an economically unfavorable situation. According to existing law, they are granted one additional day of work per week at 50 percent wages and 1-2 more days without preserving their wages if desired for training. Training is conducted during the evening hours (2-3 times per week) after work. This, combined with increased fatigue, significantly reduces the desire to learn. As a result, there is an insignificant number of individuals 40 years old or older in evening schools. This in turn results in psychological discomfort caused by disproportions in the age composition of the work force.

Performing the same work for years and the resulting lack of need to add to one's educational knowledge results in a significant loss of the habit of learning and the skill for learning. The latter makes the process of mastering new knowledge extremely difficult. Older persons' deteriorating memories and the corresponding deteriorating perception of new information complicates it even more. The administration's negative attitude toward diverting workers from production for training

operates in this very direction and a stereotype has taken shape among workers about the uselessness of a higher education and the unnaturalness of studying at an advanced age. In this regard, we need to search for new ways with which to arouse the worker's interest in improving his knowledge throughout his working life. A worker who increases his education level should not be oppressed, but should be encouraged both in the economic and in the social context. In our opinion, we need the following for this: an increase in the number of days allotted to older workers for training while maintaining their average wage and conduct of training on precisely those days; improvement of the training process while taking the socio-psychological peculiarities of the workers into account; and, introduction of systems of additional incentives for individuals who continue their education.

Reduction of wages can become quite real for older individuals during mastery of new equipment. Thus, according to available data, 14.5 percent of older workers experience a reduction in wages and 53.0 percent experience no wage changes when new equipment is being introduced. When this reduction of wages is frequently compensated for by increasing work time during mastering of new operations, then this is insufficient (monetarily) during mastery of new equipment.

Wage losses are explained by two causes. First, a lower wage level while working on new equipment. For example, we know that digital program control lathe operators earn less than universal lathe operators. Although wage levels have been recently increased for workers who operate modern types of equipment, nevertheless the equipment's low quality, lack of equipment, instruments, and software result in frequent work stoppages and consequently in loss of wages. Second, a longer mastery period (due to the reasons set forth) for older individuals. If mastery of new operations is not constantly ongoing and the worker can compensate for losses in wages by carrying out well mastered operations, this process can go on for months during mastery of new equipment and losses can be significant and irreparable. In order for this not to occur, in our opinion, we need to change the compensation system for workers who are mastering new equipment. We need to create conditions under which these workers would be insured wages at the average level for the profession throughout the entire apprenticeship and mastery period. At the present time, these conditions are only partially insured for released workers. However, a supplementary payment of up to the average wage which existed at the previous work place can be established during the period of mastery but for not longer than three months. In our opinion, this practice needs to be applied in all cases when retraining is required for other than work-related causes (introduction of new technology, illness, or reduction of the capacity to work). With regard to older individuals, the periods when such benefits apply must be increased in accordance with the actual duration of time periods they need for training and mastery new equipment. A single solution for all workers is not acceptable here.

In order to arouse workers' interest in more rapid mastery of new equipment, it is advisable to use a "sliding" system of supplementary payments up to the average wage in proportion to actual output; that is, supplementary payments must gradually be reduced in accordance with increases in output. We would like to point out that this wage organization must be based not on average time periods for mastery and an increase in output in proportion to mastery but on indicators which are characteristic of workers of a precisely defined age group. We also need to apply more broadly and use the positive experience accumulated at enterprises for use of various forms of incentives for workers who are mastering new production processes and new equipment.

Thus, at the Berdsk Electromechanical Plant (Novosibirsk Oblast), an obvious gap between worker skills and job skills occurred at a machinery and repair shop. Production was saturated by new equipment and there was no one to repair or service it—worker skills clearly lagged behind the times. To overcome this negative phenomenon, a special system of work incentives was developed which was directed at arousing worker interest in raising their professional and skill levels. All of the equipment serviced by the fitter-repairmen was divided into five groups according to complexity. The simplest traditional equipment was assigned to the first group and unique and very complex equipment was assigned to the fifth group. Depending on knowledge and equipment servicing skill, an additional premium of six percent was assigned to the first group and 30 percent to the fifth group. The size of the additional premium is calculated by an accruing total for a worker who knows how to service all equipment groups. As a result, the following wage system was formed: If you want to earn more, master all types of equipment and get involved in increasing your knowledge and skills. Despite the fact that the main contingent of workers here are veteran workers, they were all compelled to begin changing their work methods.

Prevention and timeliness are important conditions for older workers' success in mastering new equipment. Lack of coordination between production technical retooling plans and scientific and technical progress personnel support plans substantially limits the possibility for successful mastery of new equipment especially for older workers. As a result, it is frequently discovered only at the time of introduction of new equipment that either worker educational level does not correspond to the required level or time periods allotted for retraining and mastery are not acceptable for them. Furthermore, it becomes clear during the process of coordinating personnel and objective production factors that the time periods for the forthcoming activity, taking retraining and mastery into account, make it inadvisable to involve them in new production. All of this practically deprives older workers of the opportunity to participate in the active replacement of production. For this not to occur,

we need long-term forecasts and coordination of technical retooling plans with plans for improving the work force's professional-skill structure.

Success in mastery of new types of equipment also depends on how much they correspond to the capabilities of older individuals. An orientation toward the capabilities of the "average" worker during equipment design often makes working on them exhausting for workers of older age groups. Moreover, we encounter cases when new equipment not only does not lighten work but on the contrary makes the work harder.

Thus, research conducted at the Leningrad Financial and Economic Institute by G.N. Cherkasov and G.K. Kopeykin proved that during work on one of the latest lathe models, the model 1286-6 semi-automatic gang lathe in comparison with the model 1K62 universal lathe, work load increases by 8 percent, physical exertion by 32 percent, and labor intensity by 23 percent. Under these conditions, hardly any worker would attempt to replace light work with heavier work, even it is more productive. Moreover, if the requirements of the labor process are in accordance with the capabilities of older individuals, this substantially eliminates existing contradictions. Thus, calculations we conducted on data of an all-union population census showed that worker employment rates on semi-automatic equipment during transition from the 30-39 year age group to the 40-49 age group increases by 35.8 percent, but during the transition from the 40-49 year group to the 50-59 year group it practically did not change at the same time that on ordinary types of metal cutting equipment it is steadily reduced in proportion to aging.

Taking data presented in this article into account will facilitate acceleration of the process of replacing the material base of production.

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ORGANIZATION, PLANNING, MANAGEMENT

Positive Aspects of Automation, Robotization Cutbacks Assessed

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[Article by E. Nagimatov, candidate of economic sciences (Moscow), under the rubric, "A Point of View": "In the Direction of Progress?"]

[Text] Goskomstat [State Committee for Statistics] was happy: our machinebuilding has speeded the updating of output more than 3-fold in the past three years. From 3.1 percent in 1985 to 11.4 percent in 1988. But strict reality suggests something else: by the end of last year progress here had slowed. Then the demand for old general-purpose machine tools and even...DIP's ["Overtake and Surpass" lathes]...rose unexpectedly. A paradox?

Hardly. We are familiar with this situation. Back in 1923, during the first Soviet marketing crisis, something similar occurred. The newspapers then wrote: "...peasants are converting from the purchase of factory machines to home-made products—the old wooden plow, the shovel, and other primitive items." And so now the customer, seemingly finding it possible to make use of the whole arsenal of modern work implements, is looking for that which is simpler and cheaper. But what are the causes of this incomprehensible jerk backward?

The root of the evil is an inconsistency of that same economic accountability that should automatically lead us to the realm of computerization, SAPR [computer-aided design], and so on. It actually has enabled the producer to jack up prices as he wishes for any modernization, however insignificant, while the customer is forced to ponder strongly on what and where to let go of his cash. Previously, when the state paid for the growth of fixed production capital, not one director bothered about what a robot complex cost, as if it were a museum exhibit. Right now, not being able to furnish a workload for expensive specially acquired machinery for three shifts, he does not buy it at all.

But indeed, even formerly, progressive equipment did not enjoy special popularity with either the producer or the customer. In the first place, because the new things were not by far always reliable. Second, there were personnel problems. Old workers, as a rule, did not want to and could not work with complicated machinery, while the young ones—the operators of NC machine tools, yesterday's 10th graders, who had not begun to work, were being mobilized for active service.

We become accustomed to new technology painfully. And the artificial resuscitation that central agencies tried to introduce in fits-and-starts style, which noisily proclaimed the policy of robotics everywhere, electrification, and so on, subsided spontaneously, by itself. While in 1987 the machinebuilders installed 300 rotary and rotary-conveyor lines, 11,000 industrial robots and 16,000 NC metal-cutting machine tools, and in the next year, 1988, 500 rotary and rotary-conveyor lines, but...it reduced the introduction of NC machine tools, industrial robots and robotics complexes. This year this trend clearly continues.

Is it not awful and a threat, to be dragged into such a situation? Will it not actually be necessary to return to the wooden plow and the shovel?

I do not think so. On the contrary, it seems strange to me that we seriously expected a sharp jump in scientific and engineering progress in precisely that period when a new economic mechanism was being formed. Economic accountability alone enables one to determine, albeit approximately, what our true requirement for equipment is. But the administrative reform has given enterprises the freedom to have this technology at their disposal. It has been estimated that if all the obsolete equipment in the country was turned over for scrap, then we would obtain about 50 million tons of steel. But is it necessary to rush with the remelting?

Right now economically accountable enterprises, by the path of buy-and- sell, are to rearrange all the existing equipment, that is, to put the items in their true places; and to transfer from basic production to auxiliary production the equipment that it needs, and to transfer it from one branch to another. For often a machine that is obsolete and unsuitable for the defense-industry branch proves to be a technical prize for a textile factory or a glass machinebuilding plant. And, because of this, those bureaucratic barriers and procedures that prevent defense enterprises from selling equipment outside provokes annoyance. This became an economic necessity long ago. And, on the contrary, one cannot assess much how the process of dismantling and installation is facilitated in concerns and in interindustry corporations similar to them.

But who specifically should do the buying and selling of released machine tools and assembly lines? Obviously, the economically accountable enterprises themselves. The local soviets could be their primary helpers. The soviets could, for the contractors' information, create a regional data bank to which information about the requirements for and the availability of equipment at enterprises could flow. The right of enterprises to exchange equipment must be consolidated in a future law about regional economic accountability.

But the decisive prerequisite for our return to the path of unswerving technical progress, it stands to reason, is the effectiveness of the economic reform itself.

Problems of Metal-Intensiveness in Machine Building Discussed

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[Article by G. Stroganov, Deputy USSR Gosplan Chairman, doctor of engineering sciences and professor, under the rubric, "Urgent Problems of Economics and Planning": "New Materials and the Saving of Resources"]

[Excerpts] The role of new materials and technologies has been raised sharply at the modern stage of development of society's productive forces. Rise in the engineering level, quality and competitiveness of the systems of machinery and equipment that have been created, the achievement of progressive engineering-economics characteristics of machinebuilding output, the creation of favorable working conditions, and the fulfillment of ecological requirements with minimal consumption of materials depend to a great extent upon their application.

Today, domestic machinebuilding is manufacturing about 11.2 percent of all industrial output and is one of the largest consumers of material resources. In producing their output, machinebuilding enterprises use more than 20 percent of the rolled ferrous metal stock produced in the country, 17 percent of the steel pipe, 42 percent of the iron castings, about 22 percent of the rolled nonferrous metal stock, 60 percent of the steel castings, and 13 percent of the plastics and synthetic resins. The share of expenditures for materials in the cost of machinebuilding output exceeds 55 percent, with raw materials being more than 40 percent of the indicated costs.

Irrational consumption—and domestic machinebuilding has many faults in this regard—becomes especially intolerable when enterprises convert to full economic accountability and self-financing. However, the materials intensiveness of machinery and equipment is still being reduced but slowly—less than 1.8 percent per year. Material expenditures in the prime cost of machinebuilding output in the past 15 years has remained practically unchanged, being 25.7 kopecks per ruble (while at USSR Mintyazhmash [Ministry of Heavy Machine Building] and USSR Minstankoprom [Ministry of Machine Tool and Tool Building Industry] enterprises it has even increased by 5-11 percent).

A comparative analysis of the cost and weight indicators of metalworking equipment made in accordance with the listings of international trade classification indicates that the machine tools and forging and pressworking equipment that we export has substantially higher metal intensiveness than corresponding American and West-German equipment. For example, the specific metals intensiveness of metalworking equipment exported by USSR Minstankoprom is 16-fold higher than similar U.S. and FRG equipment (1,062 tons per million dollars worth for our Minstankoprom, 66.4 tons per million dollars worth for the U.S. and the FRG). Such a difference is caused basically by a lack of improvement in the structure, the low engineering level, and the high metals intensiveness of domestic machine tools. In 1988 the specific metals intensiveness of the Soviet Union's machinebuilding output rose by 14 percent, while in the U.S. it was reduced by 29 percent.

It is known that the use of polymer materials will enable metals intensiveness to be considerably reduced, labor intensiveness and the period of preparation for production to be shortened, and the corrosion resistance of constructional structure and, the main thing, their service life and reliability, to be raised. However, the structure of structural materials consumption that prevails in our national economy does not meet today's requirements or correspond to the achievements of scientific and engineering progress. The share of use of ferrous metals by weight in the total balance of materials consumption is 94 percent (70 percent consists of various types of rolled metal stock, the rest are castings). The share of progressive materials—thermally hardened rolled section of improved quality, plastics, polymers and composite materials, engineering ceramics, and others is only 4.6 percent (versus 18-20 percent in the USA and 20-22 percent in Japan). The situation in machinebuilding is no better in this regard—the structure of metal consumption has remained practically unchanged for 15 years. As before, nonferrous-metals consumption is at the 4-4.5 percent level. The total share of progressive structural materials used is about 3 percent. Nor is there any use in speaking about variety: domestic metallurgy yields about 4,000 sizes and shapes of rolled stock, the Klekner concern (FRG) 10,000.

In the production of agricultural machines, metal-cutting machine tools, truck trailers, pumps, compressors and certain other types of machine-building output, stress is laid on the use of ferrous-metal castings and rolled stock. At the same time, the consumption of cold-rolled plate and other types of effective metal output is 1.5-fold to 2-fold lower than for the manufacture of similar types of machinery in the U.S.

A more progressive metal-consumption structure has been taking shape in recent years in the production of new output, in which 75-80 percent of all materials consumption consists of rolled ferrous metal stock and less than 16 percent consists of ferrous metal castings. However, the share of nonmetallic materials and progressive types of rolled ferrous metal stock is practically not being increased here.

This structure of materials that the national economy uses, as well as the application of obsolete technologies in metalworking, causes great losses. An analysis of this structure indicates that 71 percent of the waste comes fromthe machining of rolled ferrous metal stock, 20 percent from the machining of steel and iron castings. This is because only 35-40 percent of the rolled ferrous-metal stock is subjected to machining by progressive methods for shaping and for laying out (the rolling of

parts, isothermal forging, shaping in a superplastic state, upsetting and reeling, sizing, and so on), while thermal and surface (metal- spraying) machining operations and work hardening form no more than 25 percent.

The use of progressive types of rolled ferrous metal stock (thermal hardening and low-alloy, bent section, intricate shapes of high purity, and hot rolling) increases its utilization factor by 15-25 percent. However, their share in the metal-consumption structure grows but slowly and today does not exceed 25 percent.

Improving the metal-consumption structure is the job of both ferrous metallurgy and machinebuilding. The metallurgists are actively working on it, in order to give machinebuilding the required structure and variety of metal output. But enterprises of the former USSR Minchermet [Ministry of Ferrous Metallurgy] still have not overcome the lag in producing cold-rolled plate, cold-drawn and stainless steel, thermally hardened rolled metal, and a number of progressive types of metal output. As a result of this alone, the national economy's metal saving during the five-year plan will be 35-40 percent less than planned. The machinebuilders, in their turn, are converting but slowly to progressive technological processes and are not delivering new kinds of highly productive equipment for producing effective metal products in timely fashion or in adequate amounts and of good workmanship.

If the metals-consumption structure is to be optimal, it should be changed considerably: the share of consumption must be increased up to about 60-65 percent for plate, up to 27-28 percent for items slated for further conversion and for metalware and pipe, and more than doubled for rolled plate with various coatings and of curved shape. It is natural that, in so doing, the utilization of cast ferrous metals will be decreased and the structure of use improved intensively.

The machinebuilders, in creating new equipment and in preparing production facilities for mastering series output thereof, should work more closely with ferrous-metallurgy enterprises. This will enable them to consider, in their activity, the potential of new and progressive types of metal output and, simultaneously, to present to said branch their own increasing requirements.

At present the underlying criteria for assessing the scientific, engineering and economic activity of machinebuilding enterprises are the quality and reliability of the product; materials intensiveness and ecological parameters; the degree and rapidity of satisfaction of large-scale and individual demand; and high flexibility and adaptation of the production staff and of laboring collectives to rapidly changing conditions caused by the dynamicity of scientific and engineering progress. The main components of such a synthesis in machinebuilding are the development and production of modern equipment that uses materials of the newest generations and progressive technologies. It is with such a combining of requirements that a unified technical policy should be implemented, new equipment developed for the appropriate stands, capacity prepared for its production, and personnel trained for its exploitation.

We are using this approach primarily in defense industry branches, but it is being used but little, practically, in civilian machinebuilding. As a result, the problem of raising the engineering level of machinery and equipment as a whole and, especially, of reducing their size and weight, is being solved only slowly. On the average, domestic industrial equipment is 15-20 percent heavier and requires 14-16 percent more power than its foreign counterparts....

[passage omitted]

The lag in scientific and engineering level, the excessively high metals and power intensiveness, the great labor and materials costs for overhaul (up to 20 percent of the metal melted), and low competitiveness on the world market of the main portion of domestic-machinebuilding articles (the share of output that goes to export is no more than 5 percent of total production) are, to a great extent, the result of the lack of enough new structural materials and the mandatory use of traditional ones....

[passage omitted]

Domestic machinebuilding's unfavorable situation can be changed only by priority and accelerated development of the industry and technology for producing new and progressive materials, including the creation within machinebuilding branches of low-tonnage production of special materials. This corresponds to the trend of world development in the production and consumption of structural materials. According to a forecast, the share of new materials in various countries in the years 2000-2005 should be 35-40 percent of the total amount of materials used.

As calculations indicate, the use of such new materials as amorphous metals in distribution transformers will enable their weight to be reduced by 15-20 percent and electric-power losses to be reduced by 60-75 percent (which for the country as a whole will save at least 20-30 billion kWh of electricity). The use of amorphous metal in magnetic drives of power transformers enables a 3-fold reduction in losses to magnetic-polarity reversal, as well as a great saving of electricity. Electric motors with stators made of such materials are no less economical. However, the consumption of amorphous and other new materials in machinebuilding is now extremely limited and is impeded by their extraordinarily high cost, which in some cases leads to a great increase in the prices for the machinery, equipment and instruments being produced. It is important, therefore, to increase the output and reduce the cost of new materials, and, during application, to utilize their potential more completely and to calculate the ratio of their cost and their effectiveness.

When replacing ordinary steels with higher-strength steels, the industrial processes must be changed, both during their production and during the manufacture of metal articles. The requirements for purity and harmful-impurities content in alloys are especially increased, since the alloys of higher purity have sharply increased plasticity—the most important factors during cold forging, shaping and upsetting. The gains from converting to materials with improved characteristics are increased strength, reduced weight, a lesser requirement for fuel during transport, and so on. This occasions the need for a sharp rise in their share in the materials-consumption structure.

The effectiveness of basic and applied physical-chemistry research aimed at improving the crystalline structure of metals and alloys with a view to raising the equipment's operating parameters becomes obvious when one reviews the evolution of the materials and technologies that are used for obtaining gas-turbine blades—from ordinary casting of heat-resistant alloys to high-speed directional crystallization and the casting of eutectic alloys. This has enabled the blades' operating temperature to be raised from 880 degrees to 1,300 degrees C. and their operating life to be increased 2.5-fold.

[passage omitted]

Methods of inoculating the surface of metals and alloys simultaneously are proving effective against corrosion. According to computations, the country loses about 24 million tons of metal constructional structure to it each year. Therefore, all measures in the fight against corrosion should be viewed as a component part of the policy of saving metal and of ensuring the regulated longevity of machinery and equipment, especially of those that operate in marine and moist environments. Today the provisioning of branches of the national economy with means for fighting corrosion consists on the average of 20-30 percent of the actual requirement. Equipment produced by USSR Minstankoprom and USSR Mintyazhmash for the production of metal products with coatings satisfies the country's requirements by only 30-50 percent and is low in engineering level. This applies to a great extent to equipment for chemical and electrochemical applications of coatings, many of which is still being imported today.

The leading area of metal savings in machinebuilding for the near future remains a relocation of the center of gravity from metal-cutting technology to low-waste progressive thermal and strain methods of shaping and hardening and the automated wastefree ganged laying out of the metal. Thus, during the current five-year plan, resources are being saved in the area oa qualitative change in and optimization of the structure of the materials being used. Where the amount of production of cast and deformed blanks is practically unchanged, increase in the requirement for them is being satisfied completely through the anticipatory development and constant increase in the share of blanks that are made under progressive technologies. The share of precision blanks in the total amount of output thereof in 1988 reached 31 percent, the production of parts and intricately shaped blanks made by rolling was 220,000 tons, the consumption of articles made of powders was 44,000 tons, and parts and articles with hardened surfaces numbered 240 million items. The scale of use of plasma, ion-plasma, electron-beam and other effective machining methods rose 1.5-fold to 2-fold.

However, the saving of resources still has not become a fundamental management principle in the work of enterprises and associations. From this comes disproportions in metal consumption which to a great extent are associated with the poorly effective metalworking-equipment structure that has been preserved. Thus a rise in the share of forging and pressworking equipment in the industrial pool to 24 percent (and it is about 1.5-fold less than in the U.S.) would enable 0.5-1 million tons of metal to be saved per year. The proportion of precision machine tools, which at many enterprises is no more than 2-3 percent, is low. The share of progressive industrial processes in blank production does not exceed 23 percent, which is half that of advanced countries. The share of blanks that are obtained by the parts-rolling method is about 5 percent of the total volume of precision blanks.

Such large metal consumers as USSR Minavtoselkhozmash [Ministry of Automotive and Agricultural Machine Building], USSR Mintyazhmash and USSR Minstankoprom have delayed introductions of capacity for parts-rolling production for the whole 12th Five-Year Plan and already are posing the question of transferring them to the next plan, and this says something about the shortfall in deliveries of 1 million tons of precision blanks. According to calculations, the conversion of 1 million tons of rolled steel stock from cutting machining to precision plate forging provides a saving of 250,000 tons of metal and frees 16,000 metal-cutting machine tools and more than 20,000 blue-collar workers.

At present the amount of use of polymer materials and the pace of its expansion, the products mix, and the quality level thereof are the most important indicators of scientific and technical progress in machinebuilding. Thus in recent years the world has begun to use various types of filled polymer materials widely as good-quality structural materials. They are competing successfully with metal in strength, resilience and other physical parameters, the combinations of polymer components enabling new structural materials with previously prescribed properties to be obtained. This direction of the effective replacement of metals in machinebuilding, in combination with composites, is most promising. Each year the growth in world production of polymer blends comprises 17 percent (where the growth in total plastics output is about 3 percent). In the long term the use of individual polymers will be sharply reduced, and polymer mixes and alloys, the use of which in domestic machinebuilding is still used basically at the exploration and testing stages, will be displaced.

A new and extremely promising direction in saving resources is conversion to the wide use in machinebuilding of composite materials based on polymer, metal and ceramic matrices with various hardening fillers. These materials, through various combinations of the components that comprise them, can provide previously prescribed, very high physico-mechanical parameters (strength, module of elasticity, resilience, heat resistance, resistance to chemicals and to corrosion, and so on) and permits the creation of equipment with engineering-economics indicators that cannot be achieved with traditional materials. They are still being used basically in the manufacture of space and aviation equipment, members of which undergo harsh specific loads at a temperature of several thousand degrees (a low-temperature plasma environment).

It must be said that domestic machinebuilding lags considerably behind in amount of composite materials produced and used. For example, in hydrocarbon materials and carbon-fiber reinforced plastics—and today these are the most effective and widely used composites—5-fold, in materials with a metallic matrix 30-fold, and fiberglass-reinforced plastics 8-fold. The main cause of this is lack of the necessary industrial equipment and its high cost. Of composites, fiberglass-reinforced plastics and other more expensive materials based on polymers are being used for the most part in the complex's branches. Metal composites and functional ceramics are practically not being used. Machinebuilding requirements for composite materials by the year 2005 will be 2-2.5 million tons, which is equivalent to 8-10 million tons of high-quality steel (it is planned to use only 82,000 tons of all types of composite materials in 1990).

In recent years much attention has been paid to ceramics and their combinations with other components. Industrial ceramics today are being called the third material after metals and plastics. The world's total production thereof in 1989 in terms of cost (not counting the USSR and CEMA member countries) will be about 150 billion dollars, its use having increased 1.4-fold over 1985. These ceramics can be used in the most diverse branches. Thus the appearance of ferrite ceramics has enabled the creation of modern high-speed computers and the appearance of optical fibers based on silicon compounds—economically suitable systems for telecommunications and opto-electronics. Industrial ceramics are being used widely in medicine and the tool industry.

According to an expert assessment, the prospects for using ceramic materials in the amount of 70 percent depend upon their mechanical, thermal, chemical and functional properties. Structural ceramics of all types are already being used successfully, albeit on a small scale, where high-temperatures and corrosiveness are combined with low or moderate static loads—in linings, heaters, casting molds, molds for hydro- and isothermic forging, various nozzles, thermal coatings, bearings, guide members for industrial tooling, and other types. For example, the installation of ceramic parts and components in internal combustion engines provides for higher permissible temperatures in the combustion chamber and reductions in an engine's weight and kinematic losses. In this case, up to 30-40 percent of the fuel can be saved. Also, ecological purity in terms of discharges and noise is increased.

The development of new technologies and composites for obtaining ceramic materials that can be realized on an industrial scale is a scientific and engineering task of great importance, complexity and urgency. It must be solved as soon as possible. The amount of use of industrial ceramics, according to the Concept of Development of the Machinebuilding Complex by 1991-1995 and During the Period up to the Year 2005 will be about 600,000 tons in 2005, which is equivalent to the replacement of about 2 million tons of metal (for comparison, domestic machinebuilding in 1990 contemplates the use of 18,000 tons of articles made of industrial ceramics).

The main causes of slowness in expanding the production and use of new and progressive materials are: the lack of an comprehensive and mutually correlated economic mechanism for controlling the saving of resources; inadequate informational support about new materials, their properties, and the methodology for structural computations; the prevailing level of prices for progressive structural materials; and the ratio of their prices with those of traditional materials (often a situation takes shape wherein replacement of the latter by the former is economically inefficient). One of the leading causes is the untimely and inaccurate determination by developers of effective areas of use of new materials, which often leads to losses instead of the expected economic benefits. Thus, the use of rolled stock of higher purity and plasticity and made of direct-reduction metal which is produced at the Staryy Oskol Electrometallurgical Combine will this year alone lead to an increase in costs of about 65 million rubles (since the wholesale factory cost of this rolled metal stock is 80 percent higher) at USSR Minavtoselkhozmash enterprises, the effective spheres of its use not having been coordinated with customers.

Practical experience indicates that many problems associated with the use of new materials have been caused by design, technology and production problems that have not been successfully resolved. This applies especially to the saving of materials. According to the computations of experts, 75 percent of material savings can be laid to the stages of research and development of materials and products (just as foreign firms are doing): up to 13 percent to the period of industrial preparation; and 12 percent to the manufacturing-process period. We still use these opportunities poorly. In connection with the conversion of military-industrial production to the production of civilian products, it apparently would be worthwhile to direct the main efforts to the use of all the developments and experience that KB's [design bureaus], NII's [scientific-research institutes] and plants of the military complex and other branches of the national economy have.

This task is not entirely simple and it requires appropriate organization of the work. This year USSR GKNT [State Committee for Science and Technology], the USSR Academy of Sciences, and USSR Gosplan, jointly with the ministries of machinebuilding, forest-chemicals and metallurgical complexes, developed designs for nationwide programs for saving resources and for using promising industrial processes and new materials. During the coordination of national economic plans for 1991-1995 with the fraternal countries, the Integrated Program for Scientific and Engineering Progress of CEMA Member Nations was refined.

The most important product mixes of new progressive materials, their parameters, assimilation periods, cost, financing sources, and the necessary equipment were set in the indicated programs with a consideration of machinebuilding's leading role. Special attention was paid to the development of experimental bases for research and the organization of low-tonnage production of new materials (it is planned to introduce into operation during the 13th Five-Year Plan about 60 such facilities). Interbranch engineering centers have been assigned to specialize in the field of the development and assimilation of the industrial technology for new and promising materials, as well as in providing industry with these materials.

In accordance with the KP NTP SEV [Comprehensive Program For Scientific and Technical Development of CEMA Member Countries] that has been adopted, joint development with the fraternal countries of special-purpose scientific, production and industrial projects at facilities for new-generation equipment that uses promising materials has been called for. In all, the projects number 19. For example, the Motokeram project calls for the creation of transportation-type engines based on the wide use of ceramic-materials research.

A deep economic interrelationship exists between resource-saving and such parameters as reliability and service life. Failure to consider it leads to great additional expenditures of social labor and causes, in the final analysis, an increase in materials intensiveness of national income. Today expenditures for overhauling equipment are comparable with the expenditures for producing it, and for some types of it they exceed them. Thus, during the period of operation, funds for overhaul and technical servicing are 6-fold greater than costs for a motor vehicle, 8-fold greater for metalworking equipment, and 12-fold greater for electronic equipment. Metal consumption for overhaul and operating needs in the national economy (according to VNIIPIvtorchermet [All-Union Scientific-Research and Design Institute of the State Trust for the Procurement and Processing of Secondary Ferrous Metals]) exceeds 20 million tons per year. The fact that about 25-31 percent of the metal output consumed in producing the machinery and equipment fleet (more than 30 percent for motor vehicles, more than 40 percent for agricultural machinery and tractors) is expended on spare parts alone during overhauling thereof indicates how great are the reserves in this sphere for saving metal.

There is but one way out of this situation—sharply increase the reliability and service life of equipment (ideally, reliable and repairfree operation of equipment should be provided for over its whole standard lifetime). With a view to raising the quality and reliability of equipment produced (in order to improve the development of models of new machinery, equipment and instruments), capital investment for strengthening the experimental-test and test-stand bases of the branch's NII's and KB's has been increased 7-fold to 10-fold during the current five-year plan over the last one. For these purposes 5.8 billion rubles have been allocated, and it is planned to rebuild and to construct more than 150 of the most important experimental-test and other test facilities. Implementation of the indicated measures will enable the level of automating NIOKR [scientific-research and design work] to be raised, the period spent developing new types of output to be shortened 3-fold to 4-fold, and the capital-labor ratio to be raised for science workers. However, these facilities will begin to yield a return only in 1991-1992, while new machinebuilding items will continue to lag behind the defense branches in working out designs for test stands and mockups. Elimination of this gap is a most important task of machinebuilding.

The national economy bears great losses while operating obsolete and repeatedly overhauled equipment (because of the lower labor productivity and output quality). The age structure of the domestic fleet of machinery and equipment, as is well known, lags greatly behind the requirements of modern scientific and engineering progress. About 56 percent of the machinery and equipment is subject to modernization and 28 percent to replacement because of wear and obsolescence. Even in machinebuilding, more than 50 percent of the equipment is obsolete and only 22-25 percent of it is progressive. The actual periods of operation of many types of equipment is double or more the established standards.

The country has made several attempts to solve the problem of timely writeoff of obsolete machinery. However, they have brought no important successes. Obviously, an appropriate economic mechanism is needed, in particular the establishment of a progressive tax on the operation of worn and obsolete equipment.

Domestic and foreign practice indicate that an intensification of specialization and rational concentration of the production of homogeneous output (or services) create a production-equipment environment for making a substantial increase in the efficiency of social production and a reduction of its materials intensiveness. The greater the effectiveness of large-scale demand, the greater the degree of unification of the parts and components used and—in configuring the structure—the proportion of box-module systems and parametric

series. A unification level in the 70-75 percent range is economically advantageous.

Unification enables labor costs to be cut a minimum of 30-50 percent, expenditures on preparation for production to be cut 2-fold to 4-fold, and the time taken to master production of the new articles cut 3-fold to 4-fold. In this case, expenditures on design and mastery of production of the new articles are reduced 2-fold to 3-fold and prime production costs by 20-30 percent, while the yield on capital is increased. The materials and metal products, the semifinished items and blanks, the industrial tools and tooling, the methods of testing and monitoring, and the terminology and designations used are subject to unification. For example, the products mix of steels and alloys used in in the USSR in a recent period increased to 3,000 items, while in the USA and France it is one-fifth to one-seventh of that.

Making wide use of the principles of unification, standardization and specialization when creating and organizing the production of new equipment is not only a technical task but also, to a great extent, a task of economics. The purpose is to obtain maximum engineering-economics effectiveness in the sphere of production and operation. Thus, the creation by ENIM [Experimental Scientific-Research Institute for Machinebuilding] of a single unified range of universal screw-cutting engine lathes has enabled metals and labor intensiveness for producing them to be reduced by 15-20 percent. The development at the Leningrad Plant for Elevating and Conveying Equipment imeni S. M. Kirov of a unified series of gantry cranes has led to a reduction of 50 percent in labor intensiveness and 15 percent in metals intensiveness for producing them.

At the same time, almost all machinebuilding enterprises are manufacturing their own types and sizes of gears and rollers, fasteners, regularly used items, and certain other types of homogeneous products. All this is being done in small lots at great expense and with high materials intensiveness and high prime production cost, factors that also raise the operating costs and increase equipment downtime. Interindustry shipments of blanks and articles do not exceed 3-5 percent. More than 6,000 enterprises, departments and sections produce iron and steel castings. The situation is about the same in tools and industrial tooling. This leads to great overconsumption of materials, tools, tooling, fuel and labor resources, as well as capital investment, and to the necessity for creating additional production space both in metallurgy and in machinebuilding.

The problem of rectifying matters in blank production is primarily interindustry in nature and requires the attention not only of individual enterprises and the branch ministries but also the USSR Council of Ministers' Bureau for Machinebuilding and USSR Gosstandart [USSR State Committee for Standards]. The Institute for Machinebuilding Problems of the USSR Academy of Sciences should have its say on this problem, with the appropriate economic substantiation.

Important work on reforming matters in this sphere, primarily in advanced areas that will be capable of providing for revolutionary updating of the basic technologies of machinebuilding production, is now being done within the framework of the promising Resursosberezheniye program. In particular, the share of progressive industrial processes in preforming and mechanical assembly facilities are to be brought up to 80 percent.

All measures are being taken to change essentially the structure of the industrial equipment being produced for machinebuilding and metalworking, with an orientation toward:

—the production and delivery of progressive automated sets of forging and pressworking equipment and of parts-rolling mills with a view to introducing unmanned and low-waste technology that will embrace all operations necessary for obtaining the finished part or article;

—an increase in the output of automated rotary and rotary-conveyor lines and the comprehensively automated production entities (sections and departments) that are formed on the basis thereof for the production of machinebuilding parts made of metal powders, polymers, composites and intermetallic, amorphous and other materials; progressive equipment intended for carrying out combined processes for machining parts that are based on the mutual action of cutting and plastic deformation methods, and electrophysical, electrochemical and other machining processes; and

—the creation and production in optimal amounts of basically new types of equipment for nonmechanical metal-machining technology—electron-beam, laser, plasma, plasma-chemical, ultrasonic, pulsed, explosive-energy, superhigh pressures, vacuum, self-propagated high-temperature synthesis, shaping in isothermal and superplasticity modes, and so on.

In improving the technology for obtaining blanks, great importance is attributed to the development of casting equipment and, especially, a severalfold increase in the production of automated mold lines, flexible production modules for precision casting, automated rotary-conveyor lines for the output of machinebuilding parts made of metal, polymers and composite materials by casting into chill molds and shell molds, and under pressure, and to other basically new industrial processes for casting production.

Intensification of material production by widely using electronic and automation systems, modern materials, and new physical-chemistry principles will raise the efficiency of many traditional technologies, will form a mutually coordinated "design, material and technology" complex, and will support adaptive modes of functioning for the means and subjects of labor. It is precisely this that is the core of structural policy for the next 15 years, based on the overwhelming development of science-intensive and resource-saving scientific and engineering areas in machinebuilding. Implementing it will

lead to a qualitative change in the structure of the equipment created and produced.

In the near term the productive capacity of the country's social, agroindustrial, metallurgical, fuel-and-power, and defense complexes is to be radically reequipped. Doing so will create the basis for increasing the economy's rate of development and its effectiveness and for reducing the materials and power intensiveness of output.

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TECHNOLOGY ACQUISITION, ASSIMILATION, COOPERATION

USSR-Bulgaria Scientific-Production Association Profiled

18230074 Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 9 Sep 89 p 3

[Article by V. Vasilyeva, special correspondent: "'SELTO' Looks to the Future: Today Is the 45th Anniversary of the Socialist Revolution in Bulgaria"]

[Text] **In Sofia it could be said that I immediately dropped in on a Bulgarian language lesson.**

"'Stol' means 'stul' [chair] in Bulgarian, while a 'stol' [table] is called a 'masa' in Bulgarian," V. Parkhomenko, the SELTO [Specialized Electrical Engineering Equipment Association] learned secretary, explained to his colleague.

His colleague—Vladislav Yurevich Pikulev, recently the chief of Rotor's international division—was entering upon his new position. "Chabanov's viceregent" is what he was called by Lyubomir Talev, one of his scientific associates, but if we are to cite his official title—representative of SELTO's general director in Bulgaria.

The MNPO [International Soviet-Bulgarian Scientific-Production Association] has its own representatives' offices in three capitals—Sofia, Moscow, and Kiev. But its main residence is in the ancient Ukrainian city of Cherkassy, where its pilot enterprise—the Rotor NPO—is located. It is also the principal work place of Alim Ivanovich Chabanov, SELTO's director, who is, at the same time, Rotor's general director, and now also a member of the USSR Supreme Soviet.

I was persistently warned against making the following mistake: SELTO means "specialized electric engineering equipment." Specialized! And not at all "modern" or "improved," as some journalists have "decoded" it. But, to be sure, there is a certain rationale in this mistake: the formally inaccurate interpretation of this abbreviation, to my way of thinking, accurately reflects the ideology of this international association. For its ultimate goal is to create the most modern and most improved equipment, capable of competing with the best world models and even surpassing them.

It is precisely this goal which has united the partners from the two countries concerned. Among them are such solid, substantial scientific organizations as the USSR Academy of Sciences' Electric-Welding Institute imeni Ye.O. Paton, the Bulgarian Academy of Sciences' Engineering Cybernetics and Robotics, the Moscow Aviation Institute, and enterprises turning out the most diverse machine-building items. At first glance, the selection of participants seems random.

"We are casting our nets wide," says V. Pikulev, "we are looking right now in many directions. What will this bring us? In principle, each of the participants understands that he could also achieve outstanding successes even independently, but if we combine our potentials, an explosive effect is possible at the points of intersection."

And there are already examples of this. Here is what was said by Zhivko Denev, deputy general director of the firm named "Vacuum Technology," which is located in the city of Ruse: "Our firm produces units for lithography in a vacuum." And then an unexpected, almost fantastic idea emerged—to combine them with Rotor's coordinate tables. We see in the future equipment which has no analogies throughout the world. It's even frightening! But the game is worth the candle: the new unit will allow us to process not just one microscheme [chip] but 100 or even 200 without interruption.

According to its status as an international association, SELTO should merely coordinate the efforts of the partners with regard to developing a new product and in organizing its cooperative production. Each of the participants fully preserves its own juridical and economic independence and its right to its own property. To be sure, in order to successfully conduct scientific research, the MNPO can create an integrated financial fund made up of contributions from the participants. Such a form of cooperation presupposes, above all, an initiatory interest of the partners in a commonly shared project; the attitudes here, in contrast to joint enterprises, are built on something other than an economic foundation.

"We perceive cooperation within the framework of the international association as the initial phase of our joint activity," V. Pikulev explains. "Today the partners are not yet ready to combine their property; we are still taking a look at each other."

Since its first few steps, however, SELTO has evolved and found the characteristic features which distinguish it from the classic scheme of an MNPO. In the first place, it immediately discovered the possibility of implementing project starts. The joint production of the following unique equipment was inaugurated: precision drilling-and-milling machine tools on linear motors, items which have no analogies throughout the world, highly precise, coordinate tables, and laser-type technological units. Their manufacturers are the Rotor NPO, the creator of this equipment, and the Arsenal state firm in the city of Kazanlak, where they are still producing individual units and processing granite mounts. But they

have already mastered the linear motor as well and will soon begin to assemble the machine tools. The equipment is being sold in the Soviet Union, in Bulgaria, and in other CEMA countries. Last year 10 million rubles worth were sold, and this year a five-fold increase is proposed. And so SELTO has its own profit, which, in general, is not characteristic for an MNPO and is rather a sign of a joint enterprise. A portion of the profits is distributed, in accordance with contractual principles, among the association members who do not participate directly in manufacturing the product concerned.

Another feature of SELTO is its foreign economic activity. Together with its representaive's office, the office of the marketing director is also located in Sofia. It concerns itself with advertising, organizes product exhibits, and maintains trade ties not only with the countries of the socialist community, but also with Western firms. An independent, cost-accounting organization known as "SELTO-Trading" is being created at its center. In short, SELTO's activity goes beyond the framework of coordinating the functions envisioned for such associations.

But problems have arisen right away. The principal one is the inconvertability of the national currencies.

"Above all, this has affected the mutual accounts between Rotor and the Kazanlak firm," V. Pikulev stated. "How should they be handled? We divided the general financial fund into two parts. The first, as provided for by the legislation, is used for the common needs of all the partners—for financing scientific programs, maintaining the apparatus, organizing exhibits, etc. The second part comprises the working capital. This is, essentially, joint property. The money is kept in accounts in both the USSR and Bulgaria. It would seem that everything is simple: Kazanlak ships out some granite slabs to Cherkassy—receives payment in the Sofia Bank; Rotor sells some machine tools in Bulgaria—the money arrives from Kiev. However, this simple scheme does not fit into the presently active legislation; the main account must be located at the place where the pilot organization is situated, i.e., in Cherkassy. And, furthermore, Kazanlak must be paid in transfer rubles. But what if there are none at a given moment? That means that they will have to wait for two or three months and scrounge up some money from various intermediate levels.

Such trouble is, of course, not unique to SELTO. Vladislav Yurevich considers that the sooner the problem of convertibility is solved, the more successfully Soviet-Bulgarian economic relations will develop. They have become very lively in recent times. "Nowadays the main goal for SELTO is the scientific quest," he said, "but as new developments appear, we intend to create production capacities to support them; and these will be the property of SELTO. The coordinating association will gradually be transformed into an economic organization. In addition, we intend to attract new partners, including Western ones. We have already begun a joint project with the Reza-ABC firm from the FRG. In the future, we consider that SELTO will become an international concern."

But that is the future, while today the employees of the Bulgarian representative's office have many current worries. Now and then the telephone rings in the room on Baba Iliytsa Street, and business meetings take place. Customers for SELTO's products are frequent guests. Peter Yenchev, technical director of the Bolshevik Tool Plant in Gabrovo, arrived to discuss laser-technology units. His plant purchased three such units. They ensure a high degree of productivity and precision for graphing beam compasses and also—which is very important—ecological purity of the production process. The introduction of laser technology has allowed this plant to enter the Western market with this tool. That is why P. Yenchev considers it profitable to do business with SELTO.

An adjuster—the laser specialist V. Kosobokov—arrived from Cherkassy. He is headed for Gabrovo. There are two more Soviet specialists working there—employed in servicing the equipment. Vladimir Ivanovich is convinced that servicing must be put on a firmer footing; permanent centers are needed with support points which would service the nearby regions. Without reliable service nowadays nobody will buy equipment.

The threads which connect Soviet and Bulgarian enterprises are becoming stronger and stronger. In Kazanlak we became acquainted with a group of specialists from Rotor. They have already been here for more than a year, employed in developing a new ChPU [numerical control] system for machine tools and laser units.

"Why are we working here and not at home?" Vitaliy Vasilyevich Anokhin, the group's leader, asked rhetorically. "In Kazanlak there is something to see on the ChPU level; the firm is outfitted with the up-to-date means of computer equipment. Moreover, cooperation with Western countries has been put on a better footing; it is possible to obtain the computers necessary for our work and, therefore, complete our work more rapidly."

A new partner—the Moscow Aviation Institute—recently appeared in Kazanlak.

"We've just begun to familiarize ourselves with its developments," said Ivan Chakov, the firm's chief enginner, "but our first impressions have given us confidence that we will find quite a bit of interest to us. We've already begun to test the new technology of applying hard coatings to metal, as worked out at the MAI [Moscow Aviation Institute]. We are hoping for good results."

In addition to scientific and production programs, SELTO is also actively engaged in a program of cooperation in the social sphere. This includes joint rest and recreation, an exchange of youth delegations, as well as helping each other in pproviding consumer goods.... Everything that is best in each of the participants in the

association—ideas, developments, equipment, rest homes—is becoming commonly accessible.

"We've been working together for half a year," says V. Pikulev, "and the initial results seem to look pretty good against the general background. But we also know that this is just the tip of the iceberg. Our basic possibilities will be revealed only after a few years, but then our achievements will be much higher. SELTO is working for the future."

Soviet Welding Technolgy, Equipment Exhibited in FRG

18230078 Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 22 Sep 89 p 3

[TASS article: "The Exposition's Undoubted Success"]

[Text] Essen. The international fair of welding equipment, held in this West German city, has ended. Leading firms from 30 countries demonstrated their products. The places where the Ye.O. Paton Electric Welding Institute's booths were located were crowded during the fair. Why did experienced foreign specialists pay so much attention to the Soviet exhibit? First of all, because a broad range of equipment and the newest welding and metallurgical technology were displayed here. This was confirmed by specific agreements. Nine large-scale cooperation programs and contracts with foreign companies were signed.

The success of the Soviet exhibit is undoubted. This testifies to the wide recognition of the high level of Soviet science and the growing trust between the USSR and foreign companies in the economic and scientific-technical sphere.

Heinz Sossenheimer, one of the fair's organizers and administrator of affairs for the German assocaition of welding equipment, gave a high evaluation of the relations between Soviet and West German specialists in the area of welding. The memorandum signed by the German association and the Ye.O. Paton Electric Welding Institute will allow more active joint development and scientific research in the important sphere of welding equipment and technology, which is of great significance for various sectors of the economy and for business.

CIVIL AVIATION

Roundtable Discusses Aircraft Industry

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[Roundtable on the aircraft industry conducted by M. Korolev, deputy chief editor of PRAVDA, with the participation of G. Novozhilov, general designer of the Moscow Machine Building Plant imeni S. V. Ilyushin; P. Balabuyev, general designer of the Kiev Machine Building Plant imeni O. K. Antonov; A. Levinskikh, general designer of Moscow's "Skorost" Machine Building Plant; A. Konstantinov, chief designer of the Taganrog Machine Building Plant; A. Kandalov, deputy general designer of the Moscow Machine Building Plant imeni A. N. Tupolev; V. Sosunov, deputy chief of the Central Institute of Aircraft Engines; L. Berestov, deputy chief of the Flight Research Institute; R. Belyakov, general designer of the Moscow Machine Building Plant imeni A. I. Mikoyan; M. Simonov, general designer of the Machine Building Plant imeni P. O. Sukhoy; A. Ivanov, chief designer of the Moscow Helicopter Plant imeni M. L. Mil; V. Kasyanikov, deputy general designer of the Ukhta Helicopter Plant imeni N. I. Kamov; G. Zagaynov, chief of the Central Aerohydrodynamics Institute; and G. Dementyev, deputy general manager of the "Molniya" NPO [Scientific Production Assocation]: "They Are Leaving Their Signatures in the Sky"]

[Text] **Aviation is an exciting word! It embraces the start of the century with Utochkin and Nesterov, the record flights of the 1930's, the air combat and fire storms of World War II, the airmen's unforgettable feats, and the Space Shuttle and "Buran"—the crown of its technical development at the end of the century: from the atmosphere to space—as a symbol of the forthcoming transition to a new millennium. Aviation is an 8-hour flight from Kamchatka or Sakhalin to Moscow and a jump across the Atlantic, but at the same time, it is sweaty lines at Aeroflot's ticket counters, and week-long departure postponements because of bad weather, and to our chagrin, the very high cost of accidents. Very likely it is the inexhaustible range of problems and concerns of the great number of persons who have been called upon to put aircraft at our service and to provide for the speed, comfort, safety, and the large scale of operations which a civilized society deserves.**

Before the opening of the unprecedented exhibition of civil and military aircraft in Moscow, on the eve of the air display where they will demonstrate their category, their developers came to our editorial offices—the country's leading aircraft designers, administrators of the largest OKB's [experimental design bureaus] and scientific research institutes, test pilots, and specialists of the USSR Ministry of the Aviation Industry. The discussion immediately took on a businesslike, problem-solving, analytical tone, not one of routine congratulations.

Thus a number of problems are touched upon in our PRAVDA review by the Motherland's best minds in aviation. M. Korolev, PRAVDA's deputy chief editor, conducted the meeting.

Time Is Flying Faster

The one who conceived of an aircraft, the one who began series production of it, and the one who took it off the ground—each one makes his contribution to aviation progress, but in general we look toward those who have the scientific and design concept, and this is fair. They should have the keenest sense of the sector's present and future. It is not a simple matter to respond to these views and questions. Throughout the entire chain, the problems rest with the designers, it seems. But with whom do their problems rest?

[Novozhilov] It is certainly no coincidence that an aircraft such as the Il-14 is flying in Antarctica even today. I had occasion to begin working on it at the S. V. Ilyushin Design Bureau. And we have been compelled to send a group of designers to Antarctica in the near future to inspect these aircraft, attest to their actual condition, and extend their service life. The same situation also applies to aircraft of this category in polar aviation, which does not exist at present, generally speaking. The polar aviation which formerly existed has been squeezed out by the Aeroflot monopoly now. But when you speak with the people who have to fly thousands of kilometers over the ice under the most severe conditions and you hear their stories about the Il-14 aircraft, you are pleased that this aircraft still continues to fly, but it is also disappointing that a proper replacement for it has not been found yet. We hope that the Il-114 aircraft which we are working on today (the last two figures remind us of the aircraft which it succeeds) will serve the people as reliably as the veterans. At least this is the way our collective is inclined.

Unfortunately, a situation is taking shape today in which the Ministry of Civil Aviation is probably rightfully complaining to the Ministry of the Aviation Industry that the fleet of civil aircraft has become obsolete. But let us take some actual examples. The Il-62 is our long-range aircraft. It made its first flight on 3 January 1963. It began carrying passengers on the eve of the 50th anniversary of the Great October Socialist Revolution. That was 1967. In 1974, the Il-62M began flying. We refitted this aircraft, improved the aerodynamics, and installed a more economical engine. As a result, we succeeded in saving a ton of kerosene for each hour of flight. Roughly speaking, 10 hours of flight means 10 tons of kerosene, and 10 tons of kerosene means a distance of 1,200 kilometers. Today the Il-62 is flying here in the country and they have been widely sold abroad. But time is passing. And we should establish that the kerosene consumption per unit of transport productivity and per passenger-kilometer for this aircraft is 47 grams. In 1980, in conformity with the periods of time designated in the government's decree, we began flights with the

350-passenger Il-86 widebody. But this is a medium-range aircraft. It consumes 33 grams per passenger-kilometer. The same as the Il-18. I am not speaking about the Il-18 because this is an entire era in the development of the Ministry of Civil Aviation. It provided for passenger flights on a truly wide scale. This aircraft has flown for many years; even now it still has not been written off once and for all and it continues to fly. Well, the Il-86 carries 3.5 times as many passengers as the Il-18. It flies at a speed of 850 kilometers per hour. The Il-18 flies at 600 kilometers per hour. But their kerosene consumption is identical—33 grams per passenger kilometer. This example attests to the fact that our science, our technology, and our series plants are not standing still. But time is flying very fast. The aircraft is in its ninth year of operation. I will return to its history again, because it is also instructive.

At that time the idea prevailed that "there" never applied to us. That our airspace would never be overcrowded, and for this reason we could fly frequently without needing widebodied aircraft. Well, we finally decided to build the Il-86. At first we gave it a range of 2,200 kilometers. Then the minister at that time, Petr Vasilyevich Dementyev, and Boris Pavlovich Bugayev, I must say, viewed this matter critically: why build an aircraft for 350 passengers which can fly only to the resorts? And today this aircraft is flying for 4,000 kilometers. In the course of its manufacture, so to speak, we succeeded in changing its engines. We changed the weight and reinforced the structure somewhat, and doubled the range by this. But comrades, I flew to Beijing recently, with a landing at Novosibirsk. We departed Moscow at 2200 hours and landed at the airport in Beijing at 0830 hours Moscow time. The entire night was taken up by the stop en route. Moreover, today this medium-range aircraft is flying the longest route, which links Moscow with Havana, with two landings. It is flying on the Moscow-Buenos Aires route. Is this really normal? I don't know what we are applauding. Now a new joint enterprise has been organized between Aeroflot and Pan American in which the Boeing 747 is being used. This is probably very good for improving mutual relations. But as a general designer, I am ashamed that we do not have our own long-range aircraft today, and you can write about this right in the paper. We are working on such an aircraft. This is the Il-96. This work is also being drawn out because of a number of circumstances.

Let us take electronics—today we have an electronic cockpit, and six television sets cover everything in the aircraft cockpit. This is the flight recording complex. But they unfortunately operate roughly like our mediocre household television sets, which are not even widely sold. These televisions are not in series production, but they are installed on the Tu-204, the Il-114, and all modern aircraft. I was in Lvov, where these sets are being turned out. There is a room like this where women are putting them together on their knees. But there are two firms in the world which are producing them, as far as I know—Toshiba and Textron. They are not selling them to us. I am told: don't worry, everything will be available, but I do not see this series production yet.

[Balabuyev] Our firm, which is a little over 40 years old, is involved with many plans. From aircraft weighing 36 kilograms—this is the entire range of hang gliders. I must say that this work is being carried out literally by enthusiasts. Because there are no materials for the wings in the country and the chemical industry cannot make them despite their efforts... Our aircraft industry is not turning out engines for small aircraft, although there are already hundreds of amateur builders and hang gliding enthusiasts. Orders continue to be issued on this problem, but neither science nor technology has responded.

Small aircraft are very popular abroad, naturally, and they are being utilized more and more. Hang gliders are being used by geologists for prospecting and inspecting thousands of oil rigs, which they reach by motor vehicle... They are used for crop treatment and inspecting vast areas; that is, this is an aircraft with a future. We are working on them, and we have many orders for them.

Then there are the small passenger aircraft. For example, the An-28, which we will be showing here at the exhibition in Moscow. The aircraft, which carries 17 passengers, is simple and operates from small airports. It flies into the canyons of Tajikistan, which has many areas that are linked with the world only by An-28 aircraft, because there are no roads at all. And there was this interesting incident recently. When an An-28 flew into a canyon, a huge eagle pounced on it. It was really huge; its talon was larger than my hand. It went through the nose cone. The aircraft went around the cliff and continued the flight without incident. It landed safely and all the passengers were safe and sound. This is a very simple and reliable aircraft. It is difficult to list everything. I have worked on the largest aircraft in the world today. That is, the "Ruslan"—the 405-ton An-124—and the "Mriya"—the 600-ton An-225, with a payload of 250 tons. These are very large aircraft, which provide limitless opportunities for speeding up construction work and transporting all kinds of cargoes.

But in the future our work will be considered unimportant. The point is that the level of computerization essentially determines the scientific and technical level of one country or another, one people or another. I am referring to computer support for the brain, because the brain is still the most important, all the same. And I believe that until we restructure and unless we resolve the problems of electronics, unless we fill our country with computers, it will be impossible to achieve the ideals of perestroyka. But our electronics are those of yesterday. And what is more, we don't have yesterday's electronics, either.

There are also many problems with materials. I believe that our chemicals, beginning with coatings, are lagging

behind. Coating is defective, and our aircraft are conspicuous right away because they are coated with our paints. But this is not only beauty, it is drag; they get dirty quickly, fuel consumption is increased, and so forth. Composition materials and nonmetallic materials, based on carbon and orgalit [pressboard], are attracting attention. Our aircraft of the future, which will take off in 1991, will have an airframe that is 25 percent nonmetal. Advanced aircraft both here and abroad now are made with 5 to 7 percent nonmetal materials. And there is a vast amount of work for the chemical industry. But we are lagging behind in the quality and relative strength of fibers. We need a uniform material of consistent quality which I would have confidence in and which could be used in an aircraft. Otherwise, we will lose both because of deficient electronics and the properties of materials. In the final analysis, weight will increase, energy consumption will increase, and we will waste fuel... And on and on...

[Levinskikh] I represent the design bureau of Aleksandr Sergeyevich Yakovlev, which was established long ago, in 1934. It is sufficient to say that altogether on the order of 76,000 aircraft have been built with our bureau's designs. In recent years we began working on passenger aircraft. There was the Yak-40, which was the first aircraft in the history of Soviet aircraft manufacturing to be sold to developed capitalist countries and to be certificated there.

Later on we built the Yak-42, and this is where there was a great deal of trouble. The shortcomings were corrected in the design. I would like to show the kind of unsound approach we had with this aircraft. Aeroflot is in desperate need of the aircraft. Aeroflot is experiencing tremendous difficulties; people are literally sleeping on the pavement near airports. But we cannot organize series production of the Yak-42 in the quantities needed. And now, with just a few dozen aircraft, we have carried nearly 19 million passengers in roughly 5 years. And we have literally sunk to the poverty level: we are building only a few aircraft each year. You are familiar with the famous American Boeing 737: about 200 of them are turned out each year, about 15 per month. Per month!

The Yak-42, according to Aeroflot, has begun working very well. It has turned out to be the aircraft that is flown the most: we are now flying it more than the Il-86, and more than the Tu-154 and the Tu-134. We have proposed that the aircraft be modified, because we see great possibilities for it. And there is complete confusion here. It turns out this way: we build an aircraft for 60 or 70 passengers, and we have an airplane for 120 passengers. And we will be building one separately for 100 passengers. Do we really need a new model for every 30 passengers? Is this necessary? Take the Boeing 737. They sometimes make it shorter in the process of operation, sometimes longer. At the customer's request. We have proposed that our aircraft be modified, and what do you think has happened? The matter has not been resolved yet.

We have refused to provide the Yak-42 to all the socialist countries because we do not have enough of them. All of them. Now we have offers for contracts with Italy, China, India, and Cuba. But what will be left for Aeroflot? Nothing will be left...

[Konstantinov] We represent the firm that is developing seaplanes and amphibians. It is the only OKB of this type. This is a serious drawback, we believe. We do not want to be monopolists, and we prefer to have competitors in this field.

Since our establishment we have built a number of types of aircraft, from the first MBR-2 flying boat (1934), which operated with all fleets and in the North during World War II—and which was used by our women pilots Osipenko, Raskova and Lomako to set a number of world records, incidentally—to the Be-12 amphibian, which is now being used by the Navy. Unfortunately, beyond this there has been a gap, comrades, a long interruption in work with seaplanes—on the order of 18 years. We believe this to be a serious deficiency. The stagnation has also had a serious effect on the skills of our personnel, of course.

The firm's collective is now working on development of the new "Albatros" aircraft for the search and rescue service. This aircraft is now the world's largest amphibian; no one has an aircraft like this. The "Albatros" is capable of landing in a distress area with the necessary rescue equipment: launches, boats, rafts, and medical supplies. It can take on board up to 60 victims at a distress scene, provide them with medical assistance, and take them to dry land.

We must make up for the deficiency in seaplane development which is not our fault. For this reason, our collective has now expanded work on the "Albatros" and its modifications in the conversion process. They include a patrol aircraft to protect the 200-mile economic zone and an aircraft for extinguishing forest fires, which will take water on board during the takeoff process. The aircraft is being developed in cargo-passenger and other versions as well.

[Kandalov] Our firm is now working on two basic aircraft: the Tu-160, a strategic bomber, and the Tu-204, a new-generation passenger aircraft, which should replace the Tu-154 and, to a certain extent, the Tu-134. Designs for the Tu-334 are in their initial stage. This is a trunk-route aircraft intended to replace the Tu-134. A number of problems which could have been overcome are being encountered in the day-to-day work. Imagine, they bring me an assignment for my signature, for approval, which bears 40 signatures. Who is responsible? Who is really responsible? Forty signatures! Imagine the amount of time it takes to draw up this document.

A report appeared in the press recently that we are devoting little attention to serviceability. This statement is absolutely incorrect. Because a great deal of attention is devoted to serviceability from the very beginning, when the design of any aircraft is established. It is

another matter that we cannot sacrifice flight performance in the name of serviceability.

For this reason, the task of general designers, and all of us, is to develop the complex to which we are not yet devoting sufficient attention. I am referring to the complex of ground and airport equipment. It must be said that our airports, both civil and military, do not stand up to criticism. At Irkutsk, I recall when the navigator on an Il-62 was removed from his forward seat at one time because the runway threshold was roughly 150 millimeters.

And there are also service lives to which we are not devoting sufficient attention. After all, an aircraft passes over about 100,000 kilometers of land during its operation. Of land, I emphasize. The weight of an aircraft is on the order of 150 to 200 tons, and the "land," if it is not developed in accordance with modern standards, will be in the same distress as our roads are. They lead to breakdowns of aircraft which generally cost more than any motor vehicles...

[Sosunov] I should point out that it is generally recognized that it takes longer to develop engines than an aircraft. And the scientific and technical work that has already been done is important here. Primarily in the introduction of electronic analysis of machines and engines—including the gas dynamics, heat, and finally, calculations for planning the service life. What have we been reproached for and are still being reproached for? A new engine incorporates a long service life in the form of its design which reaches 20,000 hours. This is equivalent, let us say, to a million kilometers in a motor vehicle traveling at 50 kilometers per hour.

All this requires the introduction of a computer that performs a billion operations per second. We have only several million operations at present. That is the first problem. The second revolutionary problem in aircraft is already being resolved—the introduction of composition materials. The engines of the next century should be made of nonmetal or composition materials to a significant extent. So an extensive program involving many sectors should be put into effect.

[Berestov] Flight testing takes up 50 percent of the time and cost of developing an aircraft. Our flight tests are roughly four times less effective than in other countries. For example, passenger aircraft. Over the past 15 years certification of a passenger aircraft abroad has taken no more than a year. Here it takes 4 to 5 years. What is the reason for this? Primarily the different practice in developing aircraft. In the Soviet Union, the principle of a simultaneous start is in effect. An aircraft airframe with its systems may be developed in 3 to 4 years, the engine in 9 years, and a good electronic equipment complex in 8 to 9 years. As a result, after building the airframe, we put inoperative equipment and a half-completed engine in it, and for the remaining 5 years we turn the aircraft into a flying laboratory in which we refine all this equipment, and we waste money, time, and effort. In the West, the procedure is different. For example, they design a passenger aircraft only after the engine has demonstrated the performance assigned in a flying laboratory. It seems to me that we also lack a free market where a general designer can go to buy the engine and equipment that are suitable.

The "Buran" is an example of putting all the achievements of flight testing technology to use. If this had been an ordinary airplane, roughly 1,500 flights would have been required to produce it normally. By comparison, the "Buran" made 16 flights. Everything else was taken care of on test benches and in flying laboratories. That is, with the correct organization of flight testing, this half of the process can be made less expensive and speeded up.

On the Basis of Defense Sufficiency

[Belyakov] Our OKB is especially military. We have built and are building fighter aircraft. If they are compared with the foreign aircraft which we have managed to examine at the latest exhibitions, particularly the ones in which the combat aircraft of our design bureau have taken part, our aircraft have not been inferior to those of other countries at all. MiG's took part in combat actions in Korea, the MiG-15 and MiG-17 were used in the Middle East, and later on the MiG-17 and MiG-21 flew in Vietnam. We were convinced at that time that our aircraft were being built with a high level of quality.

After a lengthy interval we succeeded in reaffirming this last year when we showed our combat aircraft for the first time in England, at Farnborough. It is common knowledge that before this time Soviet military aircraft had not appeared in any exhibitions in NATO countries. We showed civil aircraft and military transports at best. So the world's technical community has confirmed that Soviet aircraft, the MiG-29 in particular, were developed at a high technical level. This was confirmed not only by inspection of the aircraft and not only by their demonstration in flight—our pilots demonstrated the highest skill and true proficiency—but by comparison with the same generation of foreign aircraft as well. With the F-16 and F-18 in particular.

But we cannot stand still. Because taking the reduction of armed forces and arms expenditures into account, we are obliged to proceed from the requirements of a new defense doctrine, from the necessity for defense sufficiency.

[Simonov] Test pilot Nikolay Fedorovich Sadovnikov and I represent the OKB imeni Pavel Osipovich Sukhoy. It has been in operation since the prewar years. The firm built the Su-2 before the war. This aircraft did not turn out too successfully. On the order of 600 auircraft were built. But it took part in the war, nevertheless.

The activity of the OKB and its general designer began to flourish with the development of jet aircraft. Our aircraft are basically military.

This year we were in Paris, at Le Bourget, for the first time. And everything turned out well. PRAVDA wrote about this, and I will not repeat what is known. I will note only that the Su-27 fighter and the Su-25 ground attack aircraft produced the proper impression in the West.

Like the MiG firm, we are now faced with conversion, with cutting back expenditures for arms at any cost. Reduction is proper. At the same time, we cannot allow the country's defensive capability to weaken. And for this reason, naturally, our designers are working on the next generation of aircraft, which must meet the appropriate requirements for combat effectiveness.

[Kandalov] The Tu-160 is a strategic bomber, which the press has already mentioned. Its speed is over 2,000 kilometers per hour and it weighs 275 tons. And the range is on the order of 8,000 kilometers. Despite the fact that it is a strategic aircraft, it is a defensive aircraft all the same. In the sense that we developed it to counterbalance the American B-1 aircraft, which were planned as strategic strike bombers directed against our country.

[Ivanov] Our firm's helicopters make up roughly 90 percent of the country's entire fleet. They include practically all the helicopters in the Air Forces and the Ministry of Civil Aviation. The firm was founded by our general designer, Mikhail Leontyevich Mil. Everyone who has worked with him has the very best recollections. The OKB is now headed by Marat Nikolayevich Tishchenko.

Most of our helicopters have been turned out in series and are operating successfully, beginning with the Mi-1, developed in 1949, and ending with the Mi-26, which has the largest load-lifting capacity in the world. We demonstrated our aircraft at Le Bourget recently. The assessment of the world aviation community attests to the fact that they rate our firm highly and consider our aircraft to be entirely at the world level. In spite of the problems we are encountering, they are no less than those of other firms. And evidently we must now think primarily about how to maintain what we have achieved, all the same. Now it is being stated in the press and other places that we must cut back expenditures for defense and shift our facilities to useful goals, so to speak. But I must say that the most developed and the strongest technical field in our country, the one which is responsible to a significant degree for our country being a great power, is our so-called defense "nine." And the best efforts to date have been concentrated in this field. It seems to me that it would be a mistake to begin breaking up this potential rather than utilizing it, advancing, and moving all the rest of industry and the economy as a whole ahead with it.

[Kasyanikov] The OKB imeni Nikolay Ilich Kamov was organized in 1948, but the first helicopter with the Ka designation was built in the country as long ago as 1929. We are charged with providing the Navy with helicopters. The recent operation in the Black Sea which was conducted successfully with the Americans to identify nuclear munitions on a vessel was carried out with the help of our helicopter. This is a single aircraft, but as many years are needed to develop it as any series helicopter. Today a very long time is needed to develop an aircraft. A minimum of 10 years is spent on this. We have heard general designers say here that it hinders their work. But after all, one of the main reasons is that one group of persons orders the aircraft, but completely different persons accept it. Over a 10-year period, those who place an order retire or change positions. And when we have to turn over the aircraft, it turns out that it is not needed by the new people. They do not understand the concepts which have been incorporated in it. It is a problem! There is a great deal of friction with both the military customers and the Ministry of Civil Aviation because of it.

Attention to Conversion

This topic literally burst into our "round table" discussion, from life, as they say. Literally every speaker touched upon one aspect or another of conversion. It is understandable; a great deal of attention is being devoted to this, and certain economic hopes of both the government and the people are being pinned on the results. Meanwhile, judging by the first signals, all is not well here.

[Belyakov] It is not a simple time for people like us now. Reduction of expenditures for arms in providing for the necessary defense sufficiency obliges us to develop exceptionally effective products. For this reason it is very important that the Ministry of Defense and our authorities, including the USSR Supreme Soviet, not destroy the accumulated experience of design efforts. After all, on one hand every new aircraft carries advanced technology which is introduced in time into the national economy. On the other hand, cutting back on advanced developments and economizing on the funds allocated for them can lead to the point that we lag behind technically in aircraft. This way seems acceptable to me: reduce the output of series aircraft for a certain time, but develop all the promising new models in order not to lose the capacity to provide aircraft of the most advanced level.

[Simonov] The Council of Ministers has given us a number of assignments, including for packaging machinery. In my view, these assignments have been put together poorly. After all, they require an extensive printing base, which we do not have, and special materials, which are lacking. So our firm is faced with the task of developing all this from the bottom up. One would think that it makes sense to establish specialized enterprises to implement the conversion efficiently.

[Novozhilov] Under the conversion conditions, we must devote serious attention to the development of civil aviation. And apply ourselves to it as we did for the

Tu-144 or the "Buran" projects—with everyone together. But they demanded more from us for the "Buran" than for civil aviation, and it is far from being in first place in the world, you know. Our OKB is making automatic packaging machines, and we understand that this is necessary. But the development of aircraft such as the Il-96, the Tu-204, and the Il-114 is lagging behind considerably. And if we do not make use of the capacities of conversion in Aeroflot's interest, it is not ruled out that it will begin spending millions to purchase foreign aircraft.

[Balabuyev] There is a high concentration of brainpower in the aircraft industry. And I say that we are interested in our work on the many automated lines and shops for the food industry. It appears that they are turning out to be on a high world level, and the work is already progressing toward their series production. In a number of cases, such as hydraulic systems, there is a fortunate comparison with experience in manufacturing aircraft. But unfortunately, with the lack of a free market both in the country and in our sector, no cooperative mechanism has been developed. We are being strangled by the monopoly of a number of sectors, when a contractor dictates both his prices and his product level.

[Zagaynov] If we are speaking about conversion, there are tremendous opportunities in aviation science and technology. Here is a simple example. Recently the TsAGI [Central Aerohydrodynamics Institute] was visited by a group of deputy ministers from sectors united by the Bureau for Machine Building. They showed considerable interest in the technology for testing the strength of aircraft structures which the TsAGI has and which can be utilized for other machine building structures. Indeed, the level of our aviation equipment is high, and it has been acknowledged throughout the world. And it must not be lost; on the contrary, efforts must be increased here. Then the civil sectors will receive an ever larger return.

[Ivanov] We are now turning out grinding and dyeing machines, and equipment for making jam, and so forth, is on the way. I do not deny that all this is needed, but is it worth it to hammer in nails with an electronic machine? I think our efforts could be significantly more effective for the state if we worked at our job. For example, over the period that our sector has existed, thousands of helicopters have been sold abroad, resulting in millions of dollars in earnings. And if our plants had been given incentive for export, we could have competed successfully in the world market.

[Dementyev] This is the way that I understand conversion. It is using the aviation industry in accordance with its purpose for peaceful goals. If we are building a space shuttle, let us say, we should provide for its broad peaceful application. But we also make automatic machines for processing macaroni and vegetables as well, you know, although we are not professionals in this business, as you have already mentioned here. And another example. There is an excavator plant in Voronezh which in concept should have been turning out machinery at the world level. But they have not been operating normally for more than 3 hours at a time. Then they brought its defenders together in the obkom and asked them to help the plant. And after they "studied" the excavator's weak points, the new model operated for 2 years without a single breakdown. It seems to me that such collaboration is fruitful.

And one more example. We are engaged in a number of scientific and technical efforts for the national economy, making use of the work we have done. We are making nearly single units of unique products. But they want to receive them from us for nothing, you know. As soon as the discussion turns to payment, the customers turn aside. But now we have concluded five agreements with various ministries, the medical industry in particular. The kind of problems that must be resolved, taking into account the cooperation that took shape for the "Buran," how this will be financed, and so forth, have been mentioned here. There are similar agreements with the agroprom [agroindustrial complex] to monitor the condition of grain in elevators, for example. It is common knowledge that spontaneous combustion sometimes occurs when there is practically no grain.

[Kasyanikov] They have issued orders on conversion for us and decided that it will continue by itself. But every firm has its own conditions, after all. For example, we have four levels of authority: the union, the republic, the oblast and the rayon. And each one has its own order. They called to the rayon—we are making built-in aerosol generators for the Tomilino Factory. For the oblast, cabbage planting machines. But the ministry now is demanding a packaging machine for dried fruits as well. We held talks with the agroprom for several months, but we were unable to understand each other. We even had to go to Central Asia for a seminar. And we were amazed to learn there that the number of machines they had called for from us were not needed. But in the meantime we were busy with the dried fruits and we had to put off a request from the people in Murmansk to modify helicopters' external suspension for cargo transport. For this reason, I want to say that we cannot reduce everyone to the same level in the conversion, without taking into account the capabilities of each firm. After all, we are gladly cooperating in the interests of the national economy. We make equipment for poultry plants and conclude agreements with physicians, let us say...

The Designer Is Also a Person

It would be interesting to learn if such famous names as Tupolev, Ilyushin, Yakovlev, Mikoyan, Mil, Antonov, Myasishchev, and Sikorskiy will sparkle in our aircraft manufacturing in the future. Perhaps they are already going to work in the metro or buses, and perhaps they are just walking to an aviation hobby group in school—the ones whose surname letters will be used to identify future new airliners. But this does not concern the stars and glory. What kind of life and work is it for designers and

scientists whose official and creative duty it is to outstrip time and keep up with supersonic speeds?

[Ivanov] Before coming here, I said goodbye near our design bureau building to a designer who was a very promising employee, in my view. He is 35 years old, but he was—because he left us today. And unfortunately, I have to shake the hands of designers who are leaving us more and more frequently. Young, energetic, and promising ones. This attests to the fact that our profession is in a rather unenviable position in general. I ask: where are you going, and why? He answers: "I realize that what I am doing is not good with respect to the firm, but understand me as well; I have a family and children, there is no decent housing, and I am living with my parents in a common apartment. I cannot obtain housing with you, I am standing in lines, and I have absolutely no idea when I will receive this apartment. My salary is 180 rubles..." I should mention, incidentally, that the average salary in our firm is 210 rubles. This is somewhat less than the average for the Soviet Union. How can we keep capable designers? He is leaving for a cooperative, of course. And what will he do there? He will be sewing jackets. He hemmed and hawed a little about his earnings, but he said he foresees about 1,000 rubles per month. So we ask: how can we keep our personnel under such conditions? How can we maintain our level in general and the capacity for work ourselves? I am not speaking against the cooperatives here. Not at all. But I am saying that a mass flight from our industry has begun. And we have no means of holding it back. And I say again: the young, energetic, and promising people are leaving.

After all, our aviation industry, with all its weaknesses and complexities, is fully capable of being competitive and bringing the country a considerable amount of foreign exchange if appropriate steps are taken. But what now? We are having certain problems from exports. And if we pay a designer 180 to 200 rubles and we have a limited wage fund, and he knows that no matter how much he works he won't receive any more, no slogans and appeals have any effect. I am not asking for funds from the state. I think that all of us sitting here are earning them ourselves, and with interest; just a little part of these funds must be set aside for us so we can develop further and move forward.

[Konstantinov] The drama is that we have a mask of economic accountability, but in fact there is none. We believe that a shift to leasing forms of operation is necessary. But at the same time, we have to bear in mind that the entire national economy must be switched over. At least if our development organization shifts to a lease agreement and there are no associated organizations, let us say, we will be no better off than before and we will be put in more difficult conditions.

[Dementyev] We had to live at the Baykonur Space Launch Facility for a long time for the "Buran" launch. How many ovations were heard at this wonderful place! But aside from the city, there are areas there where people live for years, often building with their own resources. And for a month there was no water at the site. Supply deteriorated sharply, there weren't even any vegetables. I am not referring to delicacies; there were no potatoes, cabbage, or carrots. Tomatoes and cucumbers were also impossible.

We went there and began unpacking. But the military construction workers told us: men, we have taken all the money from you and the water lines will not be renovated, so do not count on water. They left some scrap for a basic technical position. This is how the cutback began. I understand in general that we must cut back, but sensibly, all the same.

[Simonov] We all want our country to turn out excellent aircraft, excellent consumer goods, excellent first-class motor vehicles, excellent recorders and electronics. For this we must not only retain an excellent engineer and designer, but train him as well. And the very first impressions are important here. I want to recall what I saw under the tropical sun of Singapore in January last year. Or in May this year in Australia, at the Richmond airbase. The most typical feature was the mass of people, all with children. Some of the children were still in carriages, dangling their hands and legs, and some of them were hanging on the necks of their parents, but everyone was sure to have children. The children climb into the cockpits and through the airplanes, look at the missiles, watch the flights, and receive a vital impression and orientation from their earliest years. For this reason I am very glad that we are finally reviving the tradition of letting young persons see not only the passages of our plants and institutes, but the technical equipment as well. After all, we cannot count on a suitable level of intelligence among the people if we do not concern ourselves with the children. For this reason, we are also setting up an exhibition at the Central Airport where the aircraft of our firm will be on display, the Su-17, Su-25, and Su-27, the fighters and bombers. In addition, we have now put the mock-up of the Su-2 in order. The aerobatic Su-26 will also be displayed, and in my view, this is very interesting: there will be a glider built by schoolchildren in Frunzenskiy Rayon. We are directing a special little plant, and the schoolchildren in Frunzenskiy Rayon are building five gliders in a year themselves; they will be flying this holiday week at the Central Airport.

I have a suggestion: let PRAVDA support the initiative of the aviation community, the Academy imeni Zhukovskiy, and a number of design bureaus, including ours: to gradually turn the Frunze Airfield into a vigorous aircraft exhibition center, beginning with these holidays. At this center the schoolchildren of Moscow will be able to fly in their gliders and receive primary training. Incidentally, this is also being done by our youth glider school. I am referring to sport and technical forms of the sport. Only in this way can we attract the young people, familiarize them with good technical objectives, and

direct the shaping of intellect in our young people. And in this way to sow the seeds of wonderful ideas and plans in the future.

* * *

"I have not seen such an assembly even with our minister all these years," Genrikh Vasiliyevich Novozhilov said to his neighbor after the discussion. "The collegium discussed important specialized problems, but not involving various plans in this way and on all aspects of our life..."

Moreover, not all those present were successful in unburdening their heart, and far from all the victories, problems and sore spots in aviation came within the framework of the "round table" and today's article. And there is no question that this subject will be continued in the newspaper. But for the present, let us interrupt the discussion to see 40 first-class aircraft of our renowned aircraft design firms at Moscow's Central Airport and watch their well-earned holiday flight in the sky over Tushino.

Il-114 Airliner Production Problems, Delays Cited

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1 Sep 89 Morning Edition p 1

[Interview with General Designer G. Novozhilov and others by V. Belikov: "A Difficult Path Into the Sky for the Il-114"]

[Text] The Il-114, the airliner of the 1990's for local routes, which serve 40 percent of our air passengers, has not taken off once, although testing should have been begun 6 months ago. The aircraft, which has two fundamentally new fan-prop engines with low-noise multiple-blade propellers, is designed to carry 60 passengers at 500 kilometers per hour. Its developers purposely chose a digital designation for their creation which recalls the legendary workhorse of the sky, the Il-14. Combining modern comfort and improved equipment with unpretentiousness, the aircraft is to replace the obsolete turboprop An-24.

How convenient and effortless a flight in the future "Il" will become may be judged from the features of its construction: there is a built-in ramp and hatch on board for transporting effects by the "carry-on baggage" method, and the distance between rows of seats in the passenger cabin is 75 centimeters. In other words, the same conveniences as on the Il-86 airbus, but put into an aircraft capable of taking off from unpaved airfields in remote areas. It is worth adding that the crew consists of just two pilots, who are helped in controlling the aircraft by a digital flight-navigation complex.

The assembly area for the Il-114 is behind the huge sliding doors of a shop of the Moscow Machine Building Plant imeni S. Ilyushin. A year ago in the same place they were preparing the long-range Il-96-300 for its first flight. The work was literally in full swing around it, time was counted in hours, and the crew headed by Honored Test Pilot of the USSR S. Bliznyuk did not leave the cockpit, we may say... Now I encountered silence, occasionally broken by individual voices heard from the depths of the fuselage. Several assemblers there were installing bundles of multicolored wiring along the sides.

[Belikov] "You're not in much of a hurry?" I asked Yevgeniy Sergeyevich Smirnov, an aircraft equipment electrician with 25 years of service in the firm.

"I don't remember," he responded, "any time when the advance example of a new aircraft has been made with such delays and interruptions in equipment deliveries. We will complete the wiring soon, and even all the wire ends have been soldered, but there is nothing to connect them to. Thus far there are no instruments in the cockpit. So we will close the wires as they are with panels and go to a new place until the necessary equipment arrives. Later we will open everything up again and begin looking at the drawings and documentation all over again to 'give a name' to the communications lines. As a result, a loss of time and earnings and a routine carryover of the times to turn out a completed product."

"This involves not only the carelessness of our partners in the associated sectors or the failure to adhere to delivery times," Yu. Yudin, chief of the plant's economic planning department, said, continuing the discussion. "After many production facilities of the Ministry of the Aviation Industry shifted to cost accounting on 1 January this year, there was a rise in the cost of production being turned out, particularly engines, instruments, electronic equipment—everything to complete our airplane."

Contracts had to be renewed with suppliers, and most importantly, questions related to additional financing for experimental developments had to be resolved. This dragged out for more than 6 months, and even today everything clearly has not been corrected, either in the Ministry of the Aviation Industry or in relations between partner enterprises.

The cost of a set of engines for our other test aircraft, the Il-96, has exceeded the initial cost by 5.5 million rubles. The Perm engine manufacturers did everything exactly and on time. We are obliged to pay them what was authorized, but then we will have nothing to pay our other suppliers. In the meantime we are looking for a way out, and urgent telegrams are being exchanged between plants, at which time we are avoiding ministerial offices, the pace is slowing in the assembly area, and the brigades have to be transferred to other sections.

The Il-114, like other aircraft of the "same age," is a new-generation aircraft. After taking off for a flight test, it is inevitable that it will require additional refinements, some adjustments in the design, and certain improvements. This is a completely normal process because the established practice is complicated by the fact that the developers of interchangeable systems do not present them as manufactured "under a seal" and completely prepared for future operation.

A test aircraft is turned into a complex test stand where they refine and bring to perfection first one, then another thing from flight to flight to the detriment of the main objective—quick certification of the entire aircraft in order to carry passengers.

"Neither I nor the collective that I supervise are declining our full responsibility for developemt of the airliner and we do not intend to shift it to anyone else," says G. Novozhilov, the aircraft's general designer. "But in my 40 years of working in aircraft manufacturing I have not had occasion to hear as frequently as now from contractors: 'Does something need to be changed or adjusted in our product? Pay so many thousands of rubles...' Why is there such a mercenary approach, when this concerns the necessity of refining what you have made to the necessary condition, and when it is still a 'raw' system, unit, or instrument?"

[Belikov] Very likely it sometimes is difficult for them to hold their ground against the dictates of a monopolist—there is no way out for you...

[Novozhilov] But then there is a proposal which I support at all levels. I am convinced that conversion in the aviation industry should be directed first of all at eliminating the lag in our civil aircraft.

On its transcontinental routes from Moscow to Havana or Buenos Aires, Beijing or Lima, Aeroflot has been compelled for the present to fly with intermediate landings in the Il-86, which has a range of only 4,000 kilometers. The local routes are being served by aircraft developed in the 1950's and 1960's and which have long been obsolete. We do not have to mention the neglect of our airline's ground facilities, either. Isn't it really obvious that it is more efficient and simpler to reorient the capacities and funds being released in OKB's [experimental design bureaus] and at experimental and series plants of the Ministry of the Aviation Industry toward urgent assistance for the country's transport facilities when 13 to 15 million people who want transportation each year cannot get it? The shortage of air tickets is one of the most critical shortages these days.

Enlisting a larger number of production facilities from the "defense sector" to turn out products for civil aviation will also put an end to the monopolism of certain suppliers and will help even now to be thoroughly prepared for the forthcoming series production of an entire family of new aircraft—the long-range mainline Il-96, the medium-range Tu-204, the short-range Tu-334, and the Il-114 for local routes.

Today each of these aircaft can be called up-to-date, but if we delay, they become obsolete without making a single flight.

Inefficiencies of Air Traffic Control System Detailed

18290289b Moscow KOMSOMOLSKAYA PRAVDA in Russian 1 Sep 89 p 4

[Article by O. Karmaza: "The Switchmen of the Sky"]

[Text] August 1969. A disaster at Yukhnov (Kaluga Oblast). An Il-14 en route from Vnukovo to Gomel collided with an An-12 military transport, and 120 passengers were killed, including 98 military school graduates.

August 1981. A disaster near Blagoveshchensk. A Tu-16 bomber collided with an An-24 passenger aircraft en route from Khabarovsk to Chita, and 37 perished.

1979. Two Tu-134's collided near Kharkov.

1985. An An-26 and a Tu-134 collided near Lvov.

The list may be continued. As cynical as this may sound, is this a normal list? Regrettable "blunders," which we cannot avoid at present with the current development of equipment?

Unfortunately, everything is explained much more simply. In all these disasters, as well as in many others, incidentally, technical malfunctions in the aircraft, miscalculations by pilots, and negligence by technicians were not at fault. The main reason is the absence of airspace ownership. It belongs to "no one" here, as we know.

Each department associated one way or another with flights has its own interests in the sky and its own objectives. They are different, of course—those of the Ministry of Defense, the Ministry of Civil Aviation, all kinds of experimental design bureaus and weather stations. But does this mean that the sky should be divided up in "pieces" like a pie? Unfortunately, this is precisely the way it is now.

A few statistics: the change of just one civil airway in the Kuybyshev area at the Air Forces' demand costs the Ministry of Civil Aviation about a million rubles a year. In 1987, because of restrictions introduced individually once again by the Air Forces, there were about 2,000 flight delays. Finally, because the Ministry of Civil Aviation cannot come to an agreement with the Air Forces and other aviation departments on straightening part of the routes or on establishing new ones which pass over so-called "closed" zones (many of which long ago ceased to be closed), the Ministry of Civil Aviation, or more accurately, the state, loses over 100 million (!) rubles every year. It loses no less, incidentally, because of the military's prohibition of departures by civil aircraft from airfields.

The reasons given by the military in these cases are most often "their" reasons, of course. Departmental reasons. But while these reasons were accepted by Ministry of Civil Aviation services unconditionally before, in accordance with the established secret rule that the Ministry

of Defense is always right, they are at least perplexed by them today. The essence of which comes down to the following: why should the passengers and employees of the Ministry of Civil Aviation themselves, who shifted to full cost accounting as of 1 January this year, incidentally, suffer because of planned measures by the Air Forces? And why should concern for passengers be considered a less meaningful and important matter than gunnery training or "firing runs?"

"According to tradition, the commander in chief of the Air Forces is responsible for use of the the country's airspace," states a professor at the Academy imeni N. Ye. Zhukovskiy, Maj Gen Avn A. I. Zadrorozhnyy. "And accordingly commanders of units locally. But this is the paradox: in being responsible, they bear absolutely no responsibility at the same time for any accident which took place on a civil air route. As prescribed, the Ministry of Civil Aviation provides an account of them..."

In the past, of course, this practice of personal and individual responsibility made sense, and moreover, it was necessary. But now, when the tasks of equal aviation departments have become far greater, there is hardly any sense or necessity to "pull the blanket" to one's side.

What is the solution? It suggests itself: in order to get rid of the departmental partitioning of the sky, we must give it a single nondepartmental organ—a kind of outside "judge." Incidentally, in 1973, when the Unified Air Traffic Control System was established (after appallingly long delays), the first step was made toward this. Though it was very small and very careful.

This step ended in bringing the UVD [air traffic control, ATC] services of the military and the Ministry of Civil Aviation together. At the same time, a lot of unresolved problems remained. As a matter of fact, the combination of words—Unified System—turned out to be "a fig leaf" under which everything remained as before. The same departmental ambitions and interests, the same lordly attitude toward the sky. No central organ was established to regulate the activity of all the subdivisions of the YeS [Unified System], and there was no opportunity to transfer to the center, even if only in part, the rights to regulate the flights from the various ministries. In other words, the YeS UVD [Unified ATC System] has been one more "soap bubble" assiduously pumped up over the past 16 years.

In order to improve the hopelessly bad situation that exists and organize everything from top to bottom, the USSR Ministry of Civil Aviation came out with a proposal a year ago to establish a State ATC System, which henceforth should become the sole manager of the country's airspace. After extremely difficult agreements and compromises, this system evidently is at last on the right track, though it has quite a few chances of being reduced to "zero" by the efforts of ministries that are looking after their interests with particular zeal.

Nevertheless, a little has already been done. But not without troubles and difficulties, of course. And here I would like to dwell in a little more detail on the base center for training the controllers in the future State ATC System—the Riga Flight and Technical School. Inasmuch as structural changes in the training process which apparently will take place in the school soon affect not only one, but many other similar educational institutions.

This refers to the fact that the RLTU [Riga Flight and Technical School] is shifting to multiple-phase instruction. That is, at first, in accordance with special-purpose agreements with aviation enterprises (this, incidentally, is one of the innovations), the school is admitting 500 to 600 persons for 2-year specialized secondary courses. After completion of the courses, the students are presented with a diploma and a controller's certificate. If an enterprise wants to make an engineer out of its specialist right away or after a certain time, it concludes an agreement with the school again, and in 2 years the new engineer has been trained. The school plans to train both engineers and controllers specifically in accordance with their future work and the conditions involved in it.

A similar principle in training has been adopted now in all the world's centers for training air traffic controllers, including the most prestigious one, the Eurocontrol Air Navigation Center (the European Organization for Air Navigation Safety). "We are not pioneers in our training structure," says I. I. Kuznetsov, deputy chief of the school for training and the one who initiated its introduction in the RLTU. "We are imitators. But if you realized the difficulty involved in giving us this 'imitation'... One would think the fact that the system now adopted in many of the country's educational institutions, including ours, is an absurdity (I am referring chiefly to the applied specialties) is realized by a great many people, if not everyone. But no one wants to change it, because they have become accustomed to it. Judge for yourselves: we now have a training period of 2 years and 10 months in the RLTU. And over this time we are not training specifically ground controllers, approach controllers, or regional center controllers, but controllers 'in general.' As a result, the periods of time to 'refine' the specialists locally and the expenditures for them are increased. Is this sensible?"

A statistic: only two graduating students (and that in the best case) are applying for one position in the "controller" specialty in the flight and technical schools now, as a rule. The ICAO (International Civil Aviation Organization) recommends that no more than 11 controllers be selected from 100 applicants. Such a selection in the current status of the training and production process is unrealistic, of course. But it is also necessary. Otherwise, the curve for accidents on civil air routes will creep along at the same level. While everything does not depend on the controller these days, a very great deal does. Do we realize this?

2DP Airship Production Planned

18290289c Moscow IZVESTIYA in Russian
2 Sep 89 Morning Edition p 1

[Report by V. Belikov: "Helping the Airship to Take Off"]

[Text] **A commission of the USSR Ministry of the Aviation Industry has examined and approved for production a full-scale mockup of the cockpit of the domestic 2DP airship.**

The aircraft, whose working designation is deciphered as "the second version of a manned airship," is being built by a collective with many years of traditions in work with lighter-than-air aircraft. Its predecessor in the 1930's was the famous "Dirizhablestroy," headed at one time by the world-renowned Italian engineer Umberto Nobile. Since that time, the design bureau and experimental production facility near Moscow has been continuing work with different kinds of aerostats which enable us to utilize a range of altitudes from several hundred meters to the stratosphere for defense needs and scientific research.

"We have been working on development of the experimental airship for about 2 years," says P. Dementyev, chief designer of the design bureau. "It was important to demonstrate that the advanced level of scientific studies and the capabilities of aircraft manufacturing make it possible to build a reliable, economical and beneficial lighter-than-air aircraft that is safe in flight and on the ground."

The pliant cigar-shaped envelope of advanced synthetic materials has a volume of a little over 8,000 cubic meters; it is 62 meters long, a little over 15 meters in diameter, and 22 meters high. It is filled with helium, a volatile but absolutely nonflammable gas which makes it possible to lift more than a 3-ton payload.

The gondola with the crew's cabin is designed to carry 14 passengers in airplane-type seats. Two aircraft engines with propellers enclosed in circular shrouds develop 325 horsepower each. They can be turned on a horizontal axis, developing additional thrust "forward and backward" and "up and down." If one engine fails the other one continues turning both propellers and control of the airship is maintained.

[Belikov] Does the pilots' work differ from that of airliner pilots?

[Dementyev] The airship's crew cabin has been made as close as possible in configuration and equipment to a cockpit on modern heavy aircraft. The control wheels, pedals, and remote control levers of the control system—the most up-to-date!—have been tested by professional testers on a special stand simulating pilot dynamics and have not produced anysubstantial criticism. The 2DP is equipped with weather radar, a deicing system, and automatic control of the air-gas system with respect to the altitude and the temperature inside the envelope.

It is assumed that flights will be at an altitude of up to 3 kilometers at a cruising speed of from 55 to 100 kilometers per hour, and that flight endurance from takeoff to landing will be over 2 days. This performance is close to that of the "Skyship" airship made in England. Incidentally, one of them was recently purchased by the Japanese police for 10.5 million dollars to patrol the superhighways.

[Belikov] But where could we use the airships?

"We have acquainted 24 ministries and departments with the potentialities of the 2DP, and the majority of them found many areas for its application—from crane assembly operations to making television reports from the air," says A. Kolchin, one of the airship's developers. "However, the Ministry of Civil Aviation, which one would think would be more interested than others in the prospects for development and operation of lighter-than-air aircraft, stubbornly refuses to acknowledge their right to exist."

The designers of the new aircraft and more than 40 cooperating organizations have proceeded from the assumption that 1991 will be the time for beginning flight tests of the 2DP. Now, when orders have already been placed by enterprises and certain assemblies and units have been manufactured, this quite realistic time has turned out to threatened by a carryover to the middle of the next five-year plan. But perhaps it is more sensible and thrifty to build an experimental model without delays and "long-term construction" in order to make a sound judgment whether the airships are needed or not.

Il-96-300 Begins Series Production at Voronezh Plant

18290289d Moscow IZVESTIYA in Russian
10 Sep 89 Morning Edition p 1

[Text] Series production of the new Il-96-300 airbus has begun at the Voronezh Aviation Production Association. The aircraft is equipped with four economical engines which make it possible to increase the airbus' range up to 10,000 kilometers without landing for refueling.

The new aircraft is a widebody with improved wing aerodynamics. The flight control and navigation complex that is installed provides for practically full automation of aircraft control under instrument weather conditions. This will help to reduce crews' fatigue on long flights and improve flight reliability and safety. On the other hand, the computer equipment will make it possible to fly this huge aircraft with three pilots.

The passenger cabins of the new airbus are distinguished by their modern decor. They have comfortable seats with individual earphones for listening to musical entertainment programs.

Bureaucratic Obstacles to Cryogenic Aviation Scored

18290269 Moscow IZVESTIYA in Russian
25 Aug 89 p 3

[Interview with Academician N. D. Kuznetsov by IZVESTIYA correspondent S. Zhigalov: "The Office Ceilings Are Higher Than the Sky: Why Cryogenic Aviation Cannot Surmount Bureaucratic Barriers"]

[Text] Kuybyshev—For the first time, our Soviet Tu-155 has flown over the planet on cryogenic fuel. The Western press put this event on the same level as the first space flight. Once again we are first, as with the first orbits in the mastery of space. It is good to be first. Being first is easier than for those who "overtake and surpass." But it is even "easier" to lose, to yield, to roll back. The loss of one of the lunar priorities automatically worked for the development of an engine using cryogenic fuel.

An article published recently in IZVESTIYA, "How We Flew Away to the Moon" (No 231), mentions the design bureau of Academician N. D. Kuznetsov, which developed the engine for the N1 rocket. But Kuznetsov's engines did not help the Korolev rocket overcome the gravitation of the command and bureaucracy system. With one wave of an official palm, the engines prepared for flights were sentenced to destruction. With another wave, those who developed them were again "transferred" to the development of aircraft engines. The Kuybyshev designers who were taken away from rockets were not subdued. They set themselves the bold task of developing an aircraft engine using cryogenic fuel. And they developed it, leaving the world's leading aircraft firms years behind. But from the first flight with liquefied natural gas to scheduled flights, a great many complex problems have to be resolved. Our correspondent discusses this with Academician and Twice Hero of Socialist Labor N. D. Kuznetsov.

[Kuznetsov] We were not the only ones looking at liquid hydrogen as an aircraft fuel. In the 1970's, designers of the American Lockheed firm attempted to develop an airplane using cryogenic fuel, but they later gave it up.

Sergey Pavlovich Korolev also came out in favor of cryogenic engines. It is necessary to accumulate experience in the use of liquid hydrogen as a fuel. This experience will begin bringing dividends tomorrow and will help in resolving complicated fuel problems.

[Zhigalov] Nikolay Dmitriyevich, in their conversations with me employees of the KB [design bureau] have expressed apprehensions: they say the program to develop engines using cryogenic fuel may be "frozen"...

[Kuznetsov] I want to believe that this will not take place. I am convinced that engines operating on cryogenic fuel are the future of aviation, and even all of civilization. The supplies of petroleum as the initial raw material for fuel in the world's various engines are limited. Even today there is a shortage of gasoline and aviation kerosene for automotive transport and aircraft in our country. Liquid hydrogen as an alternate fuel exists in vast quantities on earth—in the seas and oceans. After all, what we need to obtain it, in principle, are water and electric power. It is almost an ideal fuel in an ecological sense as well. It does not form toxic gases as an exhaust, but ordinary water vapor. It condenses and turns into water again...

[Zhigalov] To the best of my knowledge, the Ministry of the Aviation Industry has warned one of the managers of your design bureau: if the Ministry of Civil Aviation does not allocate funds, "we will terminate your work with hydrogen and natural gas..." So everything has turned on financing of the work?

[Kuznetsov] No one's ill will is hanging over us today. No one is prohibiting us. But all these years we have been haunting the thresholds of ministry offices, and we try to convince and prove that this engine is not for us, but for everyone. They nod their heads, agree, and...refuse the funds. We keep struggling against this ministerial brick wall, but no breaches are apparent in it.

[Zhigalov] Perhaps they do "not hear" you because cryogenic aviation is a bird in the bush?

[Kuznetsov] The bird is not in the bush, but in the hand. In the approaches to hydrogen we are developing an engine that operates with liquefied natural gas. Our studies and those of General Designer A. A. Tupolev's collective show that it would be realistic to convert several Tu-154's to LNG [liquefied natural gas] with the NK-88 engines in 3 or 4 years. To shift to the development of a new special-purpose aircraft and a new engine, to the extent that experience in their operation has been accumulated and that airports have been equipped for liquefaction, storage and fueling.

The limits of aviation kerosene are being felt acutely by Aeroflot even today.

We are proposing that aviation kerosene be replaced by liquefied natural gas. In our country, we have larger supplies of it than of petroleum. It is less expensive. When aviation kerosene is replaced by LNG, the basic performance features of an aircraft (range, cargo capacity, and so forth) will not be changed practically. Moreover, we acquire a considerable ecological advantage.

Development of a two-fuel aircraft and a two-fuel engine which operates on LNG and aviation kerosene may be set as the immediate task. Let us say that aircraft would fly from the central part of the country to Tyumen, Nadym and Surgut with aviation kerosene and with natural gas on the return flight, and that just the flick of a switch would be needed to change from one fuel to the other. Tell me, isn't this of real benefit to the same Ministry of Civil Aviation? Especially as there is a decree from a government commission in which the Ministry of Civil Aviation is directed to conduct a serious economic analysis of the entire program for a transition to LNG. To examine the entire infrastructure of the airport

complex: liquefaction, storage, fueling, training of maintenance personnel, safety equipment... The ministry has not begun this work in earnest yet.

With such an approach, it is not hard to predict the unfolding of events in the future, in about 10 years. Aircraft operating on LNG will appear in the West. And the same Ministry of Civil Aviation will hastily begin investing considerable sums and effort into it, rushing to catch up. And as always, no one will be responsible for the delays and mistakes. Can't our own bigwigs really teach us anything?!

[Zhigalov] No offense meant, Nikolay Dmitriyevich, but motor vehicles have been using liquefied natural gas instead of gasoline for many years now. Isn't that really an argument too?

[Kuznetsov] Motor vehicles are being fueled not by natural gas, but a propane-butane mixture. This is a by-product of oil refining. The temperature of its liquefaction is much higher than for natural gas. For this reason, it is simpler to use it. But there is not a large amount of it. But natural gas is basically methane.

[Zhigalov] What is impeding the development of a new engine most of all?

[Kuznetsov] The lack of natural gas liquefiers. In order to test an engine we need LNG in large quantities. But it turns out that no one is turning out liquefiers in our country. Such an installation has been under construction in Armenia for many years, but when will it start working? When will the delivery problems be resolved? And once again we walk to the offices with our hands outstretched: the Ministry of the Gas Industry, the Ministry of the Petroleum Industry—everywhere we meet with sympathy and...rejection. We were on the point of coming to an agreement with Kriogenmash [presumably a facility for manufacturing cryogenic machinery] on the development of a liquefier. They asked 12 million rubles for the work. We can understand them, too—cost accounting. But we do not have such money. Neither the Ministry of the Aviation Industry nor the Ministry of Civil Aviation, as I have stated, want to allocate funds for this.

But even if the question of allocating funds is resolved now, a great deal of time has already been lost. More years will go by for an installation to be established. We think that it would be expedient to purchase this installation abroad and to organize the manufacture of domestic units at the same time. It is common knowledge that those who are stingy pay twice. The expenditures, and foreign exchange expenditures as well, will pay for themselves, with interest. Countries such as Canada, Australia, and New Zealand are demonstrating their interest in aircraft that operate with cryogenic fuel...

[Zhigalov] But is it possible to develop an aircraft engine without test stand and flight testing?

[Kuznetsov] We are testing. We found the only experimental installation for liquefying natural gas in the country near Moscow, capable of producing 200 kilograms per hour. For research and experimental design work on an engine and an aircraft, the productivity must be no less than 3 tons per hour.

Well, the Tupolev employees and we are sharing these crumbs. If they pick them up, we sit and wait. If we succeed earlier, they stand idle. Take your pick. We haul this gas on two specially equipped vehicles. We wait a week for a trip, sometimes two. We are testing the engine somewhere for just a day a year, but we need a hundred times more. In a word, it is not a test of an engine, but of nerves.

[Zhigalov] Cryogenic aviation is not only a new sector of technology but of science as well. The fact that ice and flame have come together in one engine obviously requires unusual technical as well as scientific solutions. Do you need the assistance of academic science?

[Kuznetsov] Very much. The intrusion into cryogenics is leading to encounters with the must unexpected problems hitherto unknown by science. We have to resolve them by primitive measures—by trial and error, without theoretical substantiation beforehand. A simple example: roller bearings function in assemblies at temperatures of minus 100 degrees and lower. Without a lubricant, the bearings will fail at vey high rotation speeds. What is the solution? The search for a solution led to the idea of lubricating with ...liquid gas. Essentially our designers had to intrude into an unknown field. The found a method of lubricating and threw themselves into a study of it. And if the research were to continue? Much that is interesting and useful would be revealed. But we are practical workers, not involved in basic research. We have a critical need for cooperation with the Academy of Sciences. The benefit would be mutual.

[Zhigalov] Nikolay Dmitriyevich, do you think it possible that your design bureau will again be "shifted" to another topic which is more important in someone's opinion? To the best of my knowledge, even later, after the rocket engines, your collective was forced to drop what had already been started.

[Kuznetsov] This happened. We were working on a promising aircraft engine, and we had conducted the proper lengthy tests. But in high circles, machinery behind the scenes was in action unseen by the world, and work on the engine was discontinued. Now they miss it, but there is no engine for new heavy aircraft. We even hear suggestions that they be bought abroad. What have we come to!

[Zhigalov] And how do you assess the possibility of using the forgotten Korolev N1 rocket?

[Kuznetsov] That is a subject for a separate discussion. I will say only that we did not carry out the directive to

destroy the engines at that time. We have them, and they are superior to the American ones in technical performance, even today.

How much can we be switched over, how much promising work can be discarded! We were the first to fly with cryogenic fuel, and we should be the first to develop cryogenic aviation. I am convinced!

From the Editorial Staff: The ministries' dictates have been condemned from the tribune of the Congress of People's Deputies of the USSR as well, but they survive, interfere, and obstruct. The developers of an aircraft using cryogenic fuel have also found themselves in their tight departmental snares. The takeoff of designer thinking once again is limited by the ceiling of ministerial offices. Instead of thorough scientific analysis of the problems there are hushups and red tape. Instead of assistance there are references to the shortage of funds.

In our view, the prospects for development of cryogenic aviation deserve to be discussed at a session of the USSR Supreme Soviet.

MOTOR VEHICLES, HIGHWAYS

1988 Motor Vehicle Production Highlighted

18290283 ZA RULEM in Russian No 8, Aug 89 p 22

[Unattributed feature: "Some Statistics"]

[Text] Eight plants manufactured some 1,261,268 vehicles over the past year—somewhat less than in 1987, when 1,345,941 passenger cars were put out.

Passenger Car Production in the USSR in 1988	
Volga Motor Vehicle Works	731,455
including:	
VAZ-21013	11,057
VAZ-2104 and modifications	50,929
VAZ-2105 and modifications	87,319
VAZ-21063	231,150
VAZ-2107 and modifications	87,505
VAZ-2108 and modifications	90,240
VAZ-2109 and modifications	101,345
VAZ-2121 and modifications	71,910
Moscow Motor Vehicle Works imeni Lenin Komsomol (AZLK)	115,322
including:	
Moskvich—2140	84,857
Moskvich—2140-01 (ambulance)	7,629
Moskvich—21403 (manual steering)	5
Moskvich—21406 (rural model)	23
Moskvich—2140-117 ("Deluxe")	973
Moskvich—2140-121 (taxi)	23
Moskvich—2141 (VAZ-2106-70 engine)	8,740
Moskvich—21412 (UZAM-331.10 engine)	13,072
Zaporozhye Motor Vehicle Works "Kommunar"	140,031
including:	
ZAZ-968M	86,467
ZAZ-968M-005 (with 28-hp engine)	15,045
ZAZ-968MG	1,370
ZAZ-968MR	1,750
ZAZ-968MD	19,957
ZAZ-968MB	12,668
ZAZ-1102	2,774
Izhmash Production Association	131,093
including:	
IZh-412-IE-028	82,792
IZh-21251	48,301
Gorkiy Motor Vehicle Works	74,115
including:	
GAZ-24-10 (sedan)	48,578
GAZ-24-11 (taxi)	5,056
GAZ-24-12 (station wagon)	1,685
GAZ-24-13 (ambulance)	1,389
GAZ-24-17 (gas)	15,073
GAZ-3102	2,224
GAZ-14	110
Ulyanovsk Motor Vehicle Works	54,259
including:	
UAZ-3151-01 (with wheeled transmission)	8,785
UAZ-31512-01 (without wheeled transmission)	40,065
UAZ-3152-01 (ambulance)	5,409
Lutsk Motor Vehicle Works	14,871
including:	
LuAZ-969M	14,769
LuAZ-969M-01	102
KamAZ Association	129
including:	
VAZ-1111	129

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1988 Road Accident Statistics Reported

18290282 AVTOMOBILNYY TRANSPORT in Russian No 8, Aug 89 p 28

[Article by F. Ilyukhin: "Press Briefing at USSR MVD [Ministry of Internal Affairs"]

[Text] A press briefing was held in the USSR MVD press center in May that was dedicated to the decree "Changes

and Additions to USSR Legislation on Responsibility for Violations of the Rules of Driving" that took effect on June 1.

As Maj Gen V. Ishutin—the deputy chief of the GAI [State Automobile Inspectorate] Main Administration of USSR MVD—noted, some 250,000 people are killed in auto accidents each year around the world. The roads have become "hot spots" on the earth. There were 273,268 accidents in our country in 1988, in which 47,197 people were killed and 297,605 were injured.

One way of instilling order on the roads is to improve the standard documents relating to road traffic. As the statistics show, 80.9 percent of the accidents occurred through the fault of the driver, i.e., the law effectively blamed the person behind the wheel for everything. Serious complaints could be made at the same time against road workers and pedestrians. This is one of the reasons for the reconsideration of the law, where along with the further easing of legal and administrative action against participants in road traffic who have committed minor offenses, a strengthening of liability for committing the dangerous violations that lead most often to accidents is envisaged.

The chief of the road traffic organization of the USSR MVD GAI Main Administration, V. Kondratyev, and the chief of the agitprop department of USSR MVD GAI, V. Komarov, answered reporters' questions. Press representatives were familiarized with auto-accident statistics (table). Confidence was expressed at the meeting that the new decree will serve the cause of ensuring traffic safety.

Accident Rates in Auto Transport for 12 Months of 1988

		USSR		RSFSR	
Type of accident	Indicator	1988	Growth compared to 1987 (percent)	1988	Growth compared to 1987 (percent)
Total	Accidents	273,268	10.8	161,320	13.1
	Killed	47,197	18.5	25,938	22.1
	Injured	297,605	11.2	176,583	13.5
Fault of driver*	Accidents	214,116	11.3	124,754	13.8
	Killed	39,499	19.8	21,421	23.5
	Injured	243,710	11.7	142,944	14.2
Fault of intoxicated driver	Accidents	45,705	14.1	32,049	18.1
	Killed	9,098	18.8	6,325	22.8
	Injured	52,627	15.1	36,766	19.4
Fault of driver in national-economic transport	Accidents	63,166	2.2	39,421	2.3
	Of which, intoxicated	8,926	7.2	6,702	9.6
	Killed	14,366	9.6	8,531	13
	Injured	71,974	2.1	45,330	2.2
Fault of driver* in private transport	Accidents	145,661	15.2	81,774	19.4
	Of which, intoxicated	36,824	16	25,362	20.6
	Killed	24,563	25.4	12,619	30.6
	Injured	167,032	16	94,314	20.2
Fault of pedestrian	Accidents	65,245	8.9	40,351	10.5
	Of which, intoxicated	11,692	22.8	8,134	25.1
	Killed	8,764	11	5,018	13.3
	Injured	58,794	8.6	36,793	10.1
Accidents with children's injuries	Killed	5,011	11.2	2,274	18.1
	Injured	40,884	8.4	22,423	12.5

*—The difference between the total number of accidents (drivers at fault and pedestrians at fault) and the overall number of accidents is explained by the combined fault of pedestrians and drivers in some accidents.

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Highway Growth, Problems Described

18290278 Moscow AVTOMOBILNYYE DOROGI in Russian No 8, Aug 89 pp 1-3

[Article by N. I. Golovanov, RSFSR deputy minister of highways: "Ways To Improve Operating Properties of Highways"]

[Text] The volumes of freight and passenger transport on RSFSR highways exceed more than fourfold the volumes of transport carried out by other types of conveyance taken together. At the same time, the volume of motor transport in the RSFSR grows continuously by an average of 40 percent during a five-year plan, which necessitates a qualitative change in the highway network.

At the beginning of the current year 54 (out of 71) administrative centers of autonomous republics, krays, and oblasts had highway communications with Moscow. Roundabout ways of many big cities, including Orel, Belgorod, Novgorod, Smolensk, Krasnodar, and Chita, were built and put into operation earlier. Bridges over the Amur, Don, Neva, Sura, Katun, and Khoper rivers were built and the biggest bridge over the Volga River near the city of Kazan was put into operation. An extensive program for the construction of overpasses approved by the USSR Gosplan is being implemented.

As of 1 January 1989 a total of 386,000 out of the 459,000 km of roads serviced by the RSFSR Ministry of Highways have a hard surface, including 229,000 km, an improved one. In the next few years rayon centers, which have received transport communications on well-planned roads, will make up 98 percent and central kolkhoz and sovkhoz farmsteads, 91 percent.

A complex of work directed toward improving transport-operating characteristics and creating safe conditions for the traffic of means of transport has been carried out on the serviced road network by Russia's road builders during the years of the current five-year plan. Large funds are annually allocated for these purposes from the republic budget and other sources. However, the development of the road network does not meet the needs of the national economy and transport-operating road conditions often serve as an obstacle to its further improvement.

The conditions of main highways give rise to the most serious concern. World practice shows that main highways are a powerful factor in the acceleration of economic and social development. Every ruble invested in their construction is recovered in less than 5 years. It is not accidental that many developed countries constantly improve their main highways, granting big allocations for these purposes. For example, the United States annually invests more than 40 billion dollars in road construction, including about 4 billion dollars in main highway improvement.

The length of main highways in the RSFSR is about 1,000 km, not counting 25,000 km of roads considered main highways, but not corresponding to them in their parameters. The size and strength characteristics of RSFSR main highways built in the 1950's and 1960's according to obsolete, presently abolished, normatives do not ensure the passage of constantly rising transport flows. The steps taken by the ministry to repair highways and to seasonally limit the traffic of heavy trucks on them are not very effective, because they make it possible to maintain the serviceability of only some of these roads. On the rest (there are more than one-half of them) the rates of wear outstrip the rates of restoration.

An especially difficult situation was created on highways, including main ones, after the abolition of the GOST [All-Union State Standard] for axial loads, which produced a sharp increase in the number of heavy trucks with loads on the axle exceeding the rated supporting capacity of the main part of road surfaces. Naturally, this led to unjustified deformations and at some road sections, even to breakdowns.

As a result of the reduction in the commercial speed of freight motor transport, which is now no more than 20 km/h, a significant rise in the cost of transport operations and a mass spoilage of freight have occurred. It is understandable that the reduction in commercial speeds necessitates an involvement of an ever bigger number of motor vehicles in the transport process. This, in turn, leads to an increase in traffic intensity and, accordingly, to a further prolongation of the periods of freight delivery and to an intensified road deformation.

An increase in the volumes and an improvement in the quality of highway construction and repairs are the only ways out of this vicious cycle. It is well known, however, that road construction, reconstruction, and repairs are labor intensive and expensive. According to calculations performed by the State Road Planning-Surveying and Scientific Research Institute, the implementation of the program for the construction and reconstruction of all RSFSR roads and repairs of existing ones will require tens of billions of rubles.

The level of development of the road network and its conditions determine to a significant extent traffic safety on the roads of the Russian Federation. As long ago as 1985 the ministry board examined the sector's tasks for the 12th Five-Year Plan and established the Program for Improving the Transport-Operating Conditions of Public Highways and Raising the Traffic Safety Level for 1986-1990. This program was approved by the Presidium of the All-Union Road Traffic Safety Commission. In the next few years it is anticipated bringing the provision of highways with road signs, enclosed bus stops, parking and rest areas, and hard-surface access roads up to normatives, bringing the construction of speed transition lanes closer to normatives, and increasing the capital and overall nature of operations significantly.

However, despite the measures taken, the transport-operating conditions of many roads, the level of their

equipment, rates of development, and performed volumes of work do not meet present requirements. The number of road-transport accidents connected with unfavorable road conditions is not decreasing, comprising 15 to 16 percent of their total number.

The problem of bridges, many of which in their load capacity and sizes do not meet modern requirements, occupies a special place in the rise in the technical level and operating conditions of roads. On public roads alone 50 percent of the bridges were built under old loads. The volumes of bridge construction are growing annually. Bridge construction organizations of the USSR Ministry of Transport Construction and local construction organizations are enlisted in the construction of big bridges. During the 12th Five-Year Plan 180,000 meters of bridges are to be built, which is much more than during the 11th Five-Year Plan. It is envisaged completing the replacement of wooden bridges with capital ones on roads of general state and republic significance. However, the problem of bridge construction and repairs remains acute and its complete solution has been postponed to subsequent years.

Road marking is also a big problem. Despite the measures taken jointly with the USSR Ministry of Internal Affairs to increase the production of marking materials, which make it possible to increase the capacity of means of transport by 15 to 20 percent and lower the accident rate by 10 to 15 percent, this problem does not budge. The RSFSR Ministry of Highways receives 12 percent of the required quantity of thermally plasticized materials and 5 percent, of nitroepoxy enamel. The situation with deliveries of light-reflecting film for road signs is a little better.

True, chemists seek ways to lower the shortage in marking materials. For example, the Ministry of the Chemical Industry developed a new NP-501 compound, whose output will reach 2,500 tons in 1989. Another new marking material—yellow paint, whose output volumes, according to chemists' forecasts, can total up to 10,000 tons annually—is in the process of development.

An improvement in services for drivers and motor tourists on public roads is now an important factor in lowering the accident rate. The USSR Council of Ministers and the RSFSR Council of Ministers adopted a decision on the construction of road service complexes on motor roads. In accordance with this 227 such complexes will be built on Russia's most important roads before 1995. Ten module-type road service complexes, where housing, protected parking, food, medical aid, and small repairs are provided for drivers for moderate pay, operate in the system of the RSFSR Ministry of Highways right now.

At present the work of road organizations is judged not only according to the number of built and repaired road kilometers, but also according to how these roads are equipped with service facilities, means of communication, signs, and technical aid centers; in brief, according to how road builders solve the problem of improving the consumer properties of roads defined by the concept of "transport-operating conditions."

Unfortunately, the gross, expenditure principle predetermining the priority of some types of operations over others prevailed in the sector, as in the country as a whole, for a long time. As a result, highway maintenance became simply unprofitable for production workers. This was manifested in an especially noticeable manner under the conditions of transfer of road organizations to cost accounting. Such a situation led to the need to introduce special measures aimed at increasing the economic responsibility and interest of production organizations for the quality of highway maintenance.

At the same time, an evaluation of the quality of maintenance is not yet an evaluation of transport-operating highway conditions (TES AD). TES AD is a more serious level of evaluation, which includes the totality of road conditions ensuring the possibility of correlating the consumer properties of roads with the required standard.

The Ministry of Highways has begun work on determining the possibility of applying an overall TES AD indicator. In 1989 an experiment in such a road evaluation is conducted at the Chelyabinsk Society for Furthering the Development of Automobilism and Road Improvement, at the Altay Society for Furthering the Development of Automobilism and Road Improvement, and on the Volga Highway on highways of general state and republic significance. Specialists and laboratories of the Scientific Production Association of the Russian Scientific Research Institute of Roads, the Moscow Highway Institute, the Siberian Highway Institute imeni V. V. Kuybyshev, and production organizations take part in this work. Proposals for improving the present sectorial economic mechanism will be prepared according to the materials of this experiment.

To be sure, such an approach will require from societies for furthering the development of automobilism and road improvement and highways a certain change in psychology, first of all, in the area of obtaining objective information on a network's actual conditions. A set of well-equipped mobile laboratories will be required for this purpose. The ministry takes measures to accelerate the output of the required number of KP-511M, KP-502MP, and KP-514 laboratories. These laboratories enable the road organizations themselves to collect the necessary bank of data on a network's conditions and by means of the prepared programs to make an appropriate analysis and planning of work.

The inclusion of indicators, which previously were not taken into consideration, in the evaluation of the quality of a network's conditions will lead to an increase in the norms of monetary expenditures on road repairs and maintenance as compared with presently existing ones. Proceeding from this and taking into consideration the quite complex financial situation in the sector, the ministry approved normatives of repair costs calculated

with due regard for the maximum involvement of highly efficient modern technologies in this process.

What technological methods can ensure a high quality of road repairs and maintenance and with high efficiency? Sectorial science has now developed more than 100 advanced technological solutions for improving the operating qualities of highways and artificial structures.

The majority of the sector's road organizations have already had a taste for the application of geotextile materials in the most diverse variants. In the last 3 years the volume of their application has increased more than fivefold and the production list has expanded significantly. By means of geotextiles it is possible to successfully reduce material intensiveness and to increase the reliability of shoulder reinforcement. As the experience of the Komi Society for Furthering the Development of Automobilism and Road Improvement and of the Moscow-Leningrad Highway shows, reinforcement of banks with fills and of ditches with geotextiles containing grass seeds, the volume of deliveries of which has reached 2.5 million square meters this year, sharply reduces the number of washed-out road sections and helps to retain the edge of the roadbed.

The possibilities of using wet organic-mineral mixtures and asphalt concrete on the basis of stone materials of varying strength in road repairs have by no means been exhausted fully. The experience of the Moscow Society for Furthering the Development of Automobilism and Road Improvement shows that with a correct ratio of materials it is possible to attain an effect of self-restoration of coupling surface properties.

Unfortunately, the method of repairing asphalt concrete surfaces with thermal grading is still developing slowly. The DE-232 machine supplied by the Ministry of Construction, Road, and Municipal Machine Building proved to be highly imperfect and not fitted with the DE-234 self-contained asphalt heater and is now being further improved.

Despite the complications with the delivery of metal and epoxy compounds, the introduction of the technology of strengthening reinforced concrete bridges by the gluing method is expanding. This problem is especially noticed with respect to our roads and scientists should work on improving the technological effectiveness of this method.

In 1988 the development of some technologies and materials necessary for improving operating road conditions was completed and they were proposed for an extensive introduction. They include macroroughened wearing layers developed by the Russian Scientific Research Institute of Roads and successfully introduced on the Krasnodar Highway; rejuvenating compounds for asphalt concrete offered by the Yaroslavl Polytechnical Institute and the Russian Scientific Research Institute of Roads; a number of additives improving the quality of bitumen and the characteristics of asphalt concrete developed by the State All-Union Scientific Research Institute of Roads, the Yaroslavl Planning Institute, and the Voronezh Construction Engineering Institute; methods of construction of asphalt concrete surfaces possessing antiglaze properties proposed by scientists at the Moscow Highway Institute and the Russian Scientific Research Institute of Roads.

During the 12th Five-Year Plan the industry of the RSFSR Ministry of Highways developed and mastered in production 28 types of new machinery and equipment. They include:

—the RD-701 machine for installing roughened surfaces ensuring the entire complex of work in one operation;

—a series of mounted and semitrailer spreaders of antiglaze materials for series motor vehicles;

—the KP-502 mobile laboratory for evaluating the strength of road clothing and so forth.

The development of the first series of mounted equipment (21 units) on MASH-100 for the mechanization of road repairs should be completed in 1990. Work on developing an asphalt placer with an extensible working element of increased sealing capacity, which is carried out by the All-Union Scientific Research Institute of Construction and Road Machine Building according to our order, will continue. In 1989 a low-built marking machine will be manufactured according to the developments of the Rosremdormekhanizatsiya Scientific Production Association. The same association will manufacture the first batch of equipment for the storage and distribution of the new effective Kama antiglaze compound. The USSR Academy of Sciences joined in the work on the development of a bitumen-free binder.

Using advanced, new technologies under full cost-accounting conditions, during the 13th Five-Year Plan production organizations will have to solve major problems brought about by the demand of the national economy. The ministry plans a significant increase in the volumes of work on the construction of main highways (5,600 km as compared with 3,200 km during the 12th Five-Year Plan). The construction and reconstruction of almost 300,000 meters of highway bridges and overbridges, including the replacement of 200,000 meters of wooden artificial structures, are envisaged. The road commissioning volume will also increase during the next five-year plan.

Nevertheless, an analysis shows that, despite the existing increase in the rates of road construction and reconstruction, the 13th Five-Year Plan is by no means solving the basic problems in the area of road construction, leaving for the future the construction and reconstruction of no less than 7,000 km of main highways and the linking of a significant number of cities and urban-type and other settlements with hard-surface roads. The shortage of capital investments is the basic reason. A cardinal solution of the road problem requires fundamental changes in the financing system and, perhaps, in the organization of economic management.

It is obvious that the financing of the road sector should be inseparably linked with the results of activity of motor transport enterprises and motor transport as a whole, ensuring a quantitative and qualitative relationship between the needs for motor transport and the degree of development of a road network, as well as its transport-operating conditions. As calculations show, this makes it possible to sharply increase the volumes of road operations in the RSFSR without drawing budget funds into this process.

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RAIL SYSTEMS

Rail Commission Created to Handle Workers' Demands

18290285 Moscow GUDOK in Russian 9 Sep 89 p 1

[Interview with Deputy Minister of Railways L. Pingarev by GUDOK correspondent L. Patronova under "Current Interview" rubric: "Benefits Have to Be Earned"; date and place not specified]

[Text] **During these days, when some region or other of the country suddenly echoes from a high level of social tension, the ripples spreading from it also reach the Ministry of Railways in the form of packages of demands from the labor collectives of railroad workers. They contain the same troubles and the same pain. But the main thing is that there are many of them.**

A central commission has been set up in the branch staff and is working to analyze and evaluate the demands from the localities. GUDOK correspondent L. Patronova talks with Deputy Minister of Railways L. Pingarev, chairman of this commission, on what the ministry is doing to satisfy the requests of the workers.

[Patronova] Leonid Ivanovich, I will begin with the question that is on the lips of our readers. Why have the problems that are now producing tension in the labor collectives—which did not arise yesterday or even a year or two ago—not been resolved? After all, the Ministry of Railways and the central committee of the trade union worked out measures and GUDOK published letters and articles on these problems. But there have been no perceptible changes.

[Pingarev] First of all, railroad transport is an integral part of the country's economic system. All of the troubles that the national economy has endured overall were also reflected in our branch. The people who service the railroads are not especially trained for transport. They are also part of the labor contingent that the country has, part of the same general culture and culture of labor. They have the same merits and the same shortcomings.

[Patronova] You have in mind not only ordinary workers....

[Pingarev] Everyone, from commanders to ancillary workers, the entire human factor in its contemporary form. That is all we have.

In my opinion, however, it is necessary to consider the main characteristic of the trouble—insufficient financing of the branch from the state budget. It was done from year to year and from five-year plan to five-year plan through the central planning authorities and government without considering the important place that transport occupies in the national economy. Ideally its capacities and possibilities must exceed the transport requirements and have a reserve for all "emergency" situations.

There have been so many such cases! Take, for example, the earthquake in Armenia, when the increased flow of shipments into the regions of the disaster immediately paralyzed traffic on two railroads because of the lack of reserve capacities of the stations and track system! But even without extreme situations, there are disruptions of delivery times of shipments to industrial enterprises for the same reason: some stations are not coping with the processing of trains because of the shortage of equipment; the trains are moving slowly because of the poor state of the rails; and the throughput capacities of the main directions are exhausted.

[Patronova] The people know and see this. They address their grievances to the branch staff and ask: Why are they not demanding additional means from the government?

[Pingarev] We are indeed demanding them. We not only reflect the real needs in the formulation of the regular plans for the current period, for 5 years and for 10 years. The ministry has repeatedly appealed to the CPSU Central Committee and to the government and has sought in every way to convince them of the necessity of additional capital investments from the budget into the production and social spheres. But they are continuing to be reduced.

Despite the latest decree of the party and government for the current five-year plan, we are continuing to receive an inadequate amount of locomotives, cars, rails and railroad equipment. In 1990, it is planned to allocate 2 billion less for capital investments than in the current year and last year. And the equipment has become much more expensive. This means that the branch will buy fewer new locomotives, for example, beyond allocations.

[Patronova] After such an unpleasant picture of the economic state of the branch, it is legitimate to ask the question: What can the ministry do for those collectives that turned to it with a package of demands?

[Pingarev] We are not promising mountains of gold, although a number of demands are finding understanding among the leadership of the ministry and we are seeking possibilities for satisfying them.

After analyzing them, the commission divided all the urgent questions requiring priority attention into three

groups: those that can be resolved locally, those that can be resolved at the level of the ministry and those in the competence of the government.

Only through the absence of local initiative and the habit of turning to the center for every detail can one explain the fact that the labor collectives raise such matters as the organization of the normal labor and rest of workers, the provision of special clothing and its laundering, the abolition of the call system for locomotive brigades and the transition to self-appearance, the repair of roofs and doors in dwelling houses, the improvement of the lighting of workplaces and others before the ministry.

[Patronova] It is clear that that is what the managers of railroads and departments are trained to do....

[Pingarev] Initiative has always been welcome. There are many examples of this. In GUDOK, in particular, there were articles on the fact that the collectives have found ways and means to help working women, poor families and pensioners through resources earned by the labor collectives themselves.

[Patronova] Unfortunately, there are more examples of the insensitivity of administration precisely toward this category of working people. The plan at any price is still the typical method of management. Precisely this creates social tension.

[Pingarev] Yes, the ability to lead people and to nip conflicts in the bud is professionalism that some commanders do not always have enough of. The ministry and central committee of the trade union made a number of decisions that were sent to the localities and obligate the directors of railroads, departments and subways and the managers of other enterprises and structural units to introduce additional benefits to workers through the economic incentive fund and the unified fund for the remuneration of labor: increase leave; establish leave for women until their children reach the age of three—with full or partial payment; a lump-sum grant no smaller than the average wage at the time of pensioning of those who worked at the enterprise for a long time; payments to families of those killed in production accidents equal to the average annual wage through the means of the ministry; and others. The size and order of the payments are established by the managers together with the council of the labor collective and the trade union committee and are included in the collective agreement. The railroad transport trade unions and the rayon trade unions must give comprehensive answers and advice in controversial cases. They have complete information.

[Patronova] The mail editor's office shows that the main question is still where to get the money for the establishment of benefits and lump-sum payments. So it is not a matter of funds but of the existence of resources?

[Pingarev] Earn it. There is no other answer, nor can there be.

The branch receives more than 80 percent of its income from the transporting of freight and passengers. But the railroads built a reduction of the volume of work into the plans. And this is at a time when the dispatchers had a backlog of 40 million tons of unshipped freight. There was also a reduction of passenger transportation relative to the previous year, although there was a great need for it. The branch lost more than 260 million rubles just because of the nonfulfillment of the standard for freight car turnover.

A source of considerable importance for the receipt of profit is that of paid services to the population: the production of consumer goods and the provision of all kinds of services on the basis of machine tool equipment of structural subdivisions. I will present the following figures: last year railroad workers produced goods and services, including passenger transportation, amounting to 4.3 billion rubles or about 50 kopecks per ruble of wages. There is a reserve for an increase in profit here as well.

Yes, we have a shortage of many things—locomotives, cars, track and other equipment. All the more reason why it is necessary to strive to earn money, otherwise we will not be able to get out of the vicious circle: there are no funds because there are no funds.

[Patronova] But every package of demands includes the point: give us the opportunity to earn. The standards for the deductions to the social funds of enterprises are still such that, despite the right to establish benefits, the collectives cannot utilize them. And this is why they are demanding independence in the organization of the profitable work of the line subdivision as well as in the establishment of social funds. That is, the status of an enterprise rather than a structural unit. The departments or state enterprises are in no hurry to give the line subdivisions powers that would give them the right of bosses.

[Pingarev] In the opinion of the ministry, the line subdivisions cannot fully perform the functions of an enterprise, because they do not produce the final output—transportation. Therefore, the largest part of the functions in the management of the transportation process are centralized by the department or Ministry of Railways. This also requires the centralization of funds for the development of the system, the payment of the rolling stock and track equipment and other measures.

The territorial-branch principle of management in railroad transport is confirmed by domestic experience and is applied in all developed countries. It is impossible to work as state enterprises without departments, especially on large railroads.

By the way, the representatives of the collectives of the Novosibirsk Department in their appeal to the ministry agreed that, for example, the social development fund of even such a large unit as a depot will be without effect without centralization of funds.

At the same time, in accordance with the Law of the USSR on the State Enterprise, in our view, a department can delegate a number of powers to the collectives of large structural units without harming centralization. We are working on such a version. The departments must, of course, leave part of the means of the social development fund in the structural subdivisions. It is necessary to organize the economic interrelationships with line enterprises in such a way that people will sense a material advantage from good work. The operating principle must be: if you work more, you will receive more benefits.

[Patronova] And what about that part of the demands whose satisfaction depends directly upon the ministry and government?

[Pingarev] Here it is more difficult. As I already said, the branch does not have supplemental means. The ministry and central committee of the trade union appealed to the USSR Council of Ministers with the request that it allow a 35 percent increase in freight rates. This will make it possible to receive additional profit and hence means for the resolution of many social questions.

In addition, we are asking the central planning bodies to consider housing construction in the formation of the limits of capital investments and contract work and to provide for its increase at the rate of 70,000 new apartments annually in the 13th Five-Year Plan and 80,000 annually in the 14th Five-Year Plan. Those 55,000 apartments a year that we planned to introduce in the face of the lag in the resolution of the housing problem in the previous five-year plans are inadequate and will not reduce the tension with respect to apartments before the year 2000. At the same time, we petitioned the government to release the enterprises and organizations of rail transport from the transfer of the housing space in recently built houses to local soviets.

The appeal to the government also includes a number of points on supplemental benefits; extend to the workers of the PPZhT [Industrial Railroad Transport Enterprise] the payment of a one-time compensation for long service, change the system of paying for overtime work in the summarized accounting of working time, and establish regional coefficients for the wages of the workers of a number of railroad junctions and sections.

Prior to the passage of the Law of the USSR on the Provision of Pensions, resolve the question of the privileged provision of pensions in 1989 to train marshallers and their helpers, electricians of contact systems and high-tension lines and subway workers working at night and the question of the increase in the duration of annual paid vacations up to 24 days for those employed in operational work.

We are also asking them to look into and make a decision on the possibility of recognizing the following as occupational diseases: vibration disease, ailments of the musculature and peripheral nervous system and diminished hearing related to the effects of noise for the workers of a number of occupations.

For my part, I want to note that the ministry recognizes all of these demands as legitimate. At various times, moreover, steps have already been taken to resolve them at the governmental level.

What would I like to say in conclusion? All of the enumerated measures, if adopted, will require large resources from the budget. Let us all work together and individually without breakdowns and without defects and nonproduction losses and utilize all possibilities so that the branch can work steadily and profitably.

Berkakit-Yakutsk Rail Line Status Updated

18290290a Moscow STROITELNAYA GAZETA in Russian 2 Aug 89 p 2

[Article by N. Grom, chief of the Planning and Capital Construction Main Administration of USSR MPS [Ministry of Railways]: "The Little BAM Lives"]

[Text] *The Planning and Capital Construction Main Administration of USSR MPS was charged by the ministry leadership with reviewing an article published in STROITELNAYA GAZETA on 17 Jun 89 by USSR People's Deputy S. Boykov titled "Now I Ask of the Government," and agrees entirely with the question posed in it on the necessity of continuing the construction of the new Berkakit—Tommot—Yakutsk rail line.*

USSR MPS has always supported the construction of this line, since it felt that the lack of reliable year-round connections in Yakutsk is restraining the normal social and economic development of the republic, and the national economy is moreover suffering enormous losses with the existing organization of shipping. There is no alternative solution to the construction of the railroad for improving the transportation layout of the Yakutsk ASSR.

USSR MPS and USSR Mintransstroy [Ministry of Transport Construction] set about the construction of the section of the indicated line from Berkakit to Tommot with a length of 368 km [kilometers] and an estimated cost of 1.26 billion rubles in 1985. The whole line to Yakutsk (830 km), with a rough cost of 4 billion rubles, is planned to be put into service before 1995.

Some 365 million rubles, or 29 percent of its estimated cost, have already been assimilated in the construction of the Berkakit—Tommot stretch. Construction operations have been launched over a distance of over 200 km, including 190 km of roadbed prepared for the laying of track on which 105 km of mainline track have been laid and over 150 support structures built, including 12 large bridges, and social and cultural facilities are under construction. Over 10,000 people have been mobilized for the construction, and the number of construction workers with their families reaches about 20,000 people.

The economic impact from the start-up of the Berkakit—Tommot—Yakutsk rail line, according to the calculations of specialists, will recoup all of the expenditures on its construction over the course of several years.

At the same time, taking into account the limited funds that USSR Gosplan is allocating for the development of rail transport, we are proposing to accomplish the further construction of this mainline by bringing in funds from ministries and agencies with a vested interest in it: the Yakutsk ASSR Council of Ministers, USSR Minugleprom [Ministry of the Coal Industry], USSR Minkhimprom [Ministry of the Chemical Industry] and USSR Mingazprom [Ministry of the Gas Industry], among others. Or else centralized state capital investment for the Ministry of Railways for the dedicated purpose of this project must be increased.

The USSR Council of Ministers, at the request of USSR MPS, has authorized USSR Promstroybank [Industrial Construction Bank] to continue financing the construction of the mainline.

USSR-PRC Border Rail Station Upgraded

18290290b Moscow IZVESTIYA in Russian 2 Sep 89 Morning Edition p 1

[Article by IZVESTIYA staff correspondent E. Matskevich, Alma-Ata: "Along an Ancient Route"]

[Text] *The construction of mechanized facilities for handling freight from China and resetting railcars to the gauge of Soviet railroads has begun at the Druzhba border station.*

Plans to lay down a land bridge along the route of the ancient "silk route" are becoming a reality. The builders of the Alma-Ata mainline are developing a base for erecting sidings, signals and dormitories. The 300-kilometer Aktogay—border station line is being modernized, and high-voltage electrical-transmission lines are being strung.

Our country is sending rails, ties, lumber, diesel fuel and construction equipment to the PRC on credit according to the inter-governmental agreement reached in December of last year. Foodstuffs, cotton and consumer goods will be coming from China as compensation. Regular international connections are projected to open here in the second half of 1992.

The link-up in the region of the Dzhungar Gates has great significance for more than the neighboring countries alone—this route will shorten considerably the delivery of freight from the Asian-Pacific region to Western Europe and will make it possible to ease Far East transit.

Subway Expenses, Future Examined

18290290c Moscow KOMSOMOLSKAYA PRAVDA in Russian 3 Sep 89 p 2

[Unattributed reply to letter: "Is the Metro Bankrupt?"]

[Text] *It is well known that the metro does not pay its own way. What are the prospects for its further development? Will the network of subways across the country be expanded?—G. Seliyev, Baku.*

The metro really is an unprofitable mode of transportation. The average cost of a ride by one passenger, according to official information from the Subways Main Administration of MPS [Ministry of Railways], fluctuates from 5.4 kopecks in Kiev to 33 in Kuybyshev, and totals 6.4 kopecks across the country overall. The losses of Soviet subways totaled 65 million rubles last year.

The USSR Council of Ministers decree "Halting Construction and Postponing the Start of Construction of Major and Expensive Projects" came out recently. It states that the construction of subways in Alma-Ata, Chelyabinsk, Riga, Omsk, Donetsk, Rostov, Ufa and Kazan, as well as the design engineering for subway lines in Perm and Odessa, is to be suspended. The residents of those cities will thus still have to get along without an "underground." Alma-Ata will be an exception, to all appearances: some 18 million rubles have already been assimilated there over two years.

Possible USSR Integration into European High-Speed Rail Line Pondered

18290290d Moscow IZVESTIYA in Russian 12 Sep 89 Morning Edition p 5

[Interview with Ye.A. Sotnikov, deputy director of the All-Union Scientific-Research Institute of Rail Transport, by IZVESTIYA correspondent A. Anichkin: "From Moscow to Paris Overnight?"]

[Text] *The creation of a European-wide high-speed rail transport network is an organic part of the integrative processes that are gaining force in Europe. Is the Soviet Union, the largest power in Europe, remaining a bystander? At what stage is work on this promising mode of transport in our country? IZVESTIYA correspondent A. Anichkin addressed these questions to the general designer for draft plans for high-speed and ecologically clean transport and deputy director of the All-Union Scientific-Research Institute of Rail Transport, Ye.A. Sotnikov.*

[Sotnikov] No, we are not a bystander. Our institute is to propose to the State Committee on Science and Technology a draft for the Leningrad—Moscow—Crimea and Caucasus high-speed rail line this year. If the plan is approved, we are counting on starting construction in 1992. The usual rate for the construction of such railroads is 100 km [kilometers] a year. The Moscow—

Leningrad high-speed mainline we are starting with could thus be completed in 1998-2000.

It must be said in general that the work on creating high-speed railroad transport in the Soviet Union began at the same time as the Japanese, who were, as is well known, the first in the world to run their *Sinkansen* along the Tokyo—Osaka route in 1964. Here we were only able to create a single R200 Moscow—Leningrad train, which did not receive widespread dissemination: it does not run on a special right-of-way free of other trains, as is done abroad, but rather on conventional track overloaded with freight trains. Only in 1986 did MPS [Ministry of Railways] return to the idea of creating a high-speed rail system. Today the plan is one of the priority state programs of scientific and technical development that have been approved by the USSR Council of Ministers.

[Anichkin] For many passengers crossing the western border of the USSR by rail, the many hours of standing by in Brest or Chop to switch the trains from Soviet width to the narrow European gauge serves as an unfortunate symbol of how cut off we are from Europe. Would the creation of high-speed lines help to surmount this barrier?

[Sotnikov] Well, first of all, it is not such an insurmountable barrier. There is a quite simple technical solution: the trans-European high-speed train could be equipped with special wheel pairs with locks, and on a section with a change in gauge the locks can be loosened and the rails themselves will move the wheels to the European width. The switch is made without stopping, the train just slows down to 25 km/hr. Such a system is already in use on the Spanish-French border, where the gauges are different. So far we only have a few refrigerator cars equipped with such devices.

But if we are serious, then high-speed transport will undoubtedly bring us closer to the international level—this being higher technical sophistication, highly skilled personnel, and a volume of services and comfort for the passengers comparable to world standards. They are displaying great interest in our plans abroad. A large flow of foreign tourists on the Leningrad—Moscow line will provide, we calculate, enough foreign-currency receipts to cover the essential spending. Finnish firms are ready for such collaboration. Our colleagues from France who came to Moscow helped us prepare the technical and economic substantiation for the Leningrad—Moscow—South project, including the ecological aspects of it. The high-speed railroad in France is even equipped with special bridges for deer and tunnels for the migration of frogs. We will have to raise the right-of-way onto trestles in places where it passes through fertile land. The French have calculated, by the way, that the area that is lost to airports is in reality practically the same as that occupied by railroads.

[Anichkin] When will we be able to make use of the Moscow—Paris high-speed express?

[Sotnikov] We are not yet looking that far ahead. According to our calculations, the Soviet Union needs 10,000 kilometers of high-speed railroads. Aside from the line with the highest and steadiest passenger traffic, Leningrad—Moscow—South, there are in the future mainlines to the west, to Brest or Chop, and to the east, to Novosibirsk. They are also such routes and such distances at which high-speed rail transport could efficiently supplement aviation and relieve the airports. But Paris, that is 3,000 kilometers away, and that means it is a wholly suitable distance for a high-speed express—get on in Moscow in the evening and get off in Paris in the morning...

Railcar Shortage Hits Key Metallurgical Combine

18290290e Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 12 Sep 89 p 2

[Article by SOTSIALISTICHESKAYA INDUSTRIYA staff correspondent I. Mordvintsev in Shevchenko, Guryev Oblast: "Railcar Leapfrog—A Sharp Signal"]

[Text] One of the largest enterprises of Minatomenergoprom [Ministry of Atomic Power]—the Caspian Mining and Metallurgical Combine [PGMK]—is at the brink of a complete stoppage. The reason is a typical one for the times: mutual relations with the railroad. But the fact is that effectively all and everything at PGMK is tied up with the systematic utilization of apatite concentrate right off the cars as shipped by the Apatit PO [Production Association] of Murmansk Oblast. If there is none, the whole technological chain based on the principle of the comprehensive utilization of raw materials comes to a halt. No less than 67-70 railcars a day are supposed to arrive at the combine.

But today there was not a single railcar on the sidings for apatite storage. The workers coming on for the next shift, having turned on to full capacity the water cannon intended for unloading the raw materials, were washing the tracks out of boredom. People were standing around at other places as well: there was nothing to ship the finished product out in, the storage areas were full.

And the result?

"Over August alone," reports the director of the nitrogenous fertilizer plant at the combine, Yu. Tkachev, "we undershipped by about 25,000 tons of nitroammophoska, or a total of about 3.5 million rubles in monetary terms. Fertilizer is moreover the principal source of profit for PGMK, making it possible to operate on the principles of cost recovery [*samookupayemost*]."

Today it is seemingly not accepted to disseminate the misfortunes that are the fault of MPS [Ministry of Railways]—don't kick them when they're down, as they say. But you don't get much from someone who is down, you have to help him get up as fast as possible! Alas, it is the one helping who more often gets it across the knuckles...

"Our technology," the chief of the Railroad Transport Administration of PGMK, Yu. Prokopenko, joins the discussion, "envisages the utilization of railcars on sidings for so-called paired operations. In other words, your freight goes back to you in the car that the freight was received in. The railroad workers themselves are unfortunately the ones who are breaking this scheme, advantageous exclusively for them. Instead of the planned boxcars, we are sent raw materials more and more often in mineral hopper cars, in which you can't put our output, which is packed in sacks. True, this year First Deputy Minister of Railways G. Fadeyev promised that beginning on March 12, the shipment of apatite to us would be done only in boxcars. But the shipments in hoppers increased, and then the chief of the Murmansk Division of the October Railroad, V. Dmitriyenko, 'made us happy': in the future, he said, PGMK should plan on receiving apatite concentrate only in mineral cars. Since boxcars, he said, are scarce. But who planned the shortage of one type of car and the surplus of another (by the way, more expensive and labor- and metals-intensive)?"

There it is—the typical view from the departmental ivory tower! After all, the mineral cars or hoppers travel empty over 4,500 km across practically the whole territory of the country on the way back. And to compensate for the needs of PGMK, they will have to gather empty cars and deliver them 500-1,000 kilometers from the stations of Beyneu, Makat, Kandagach and others. Both the rolling stock and the traffic capacity of the railroads are utilized inefficiently.

And yet another scandalous lack of coordination. They happened to notice something in the apatite storage areas: in cleaning out the cars with the water cannon, sweeping out the traces of the concentrates, they found piles of boards and fragments of plywood. How did they get there? Very simple, they explained. The railroad workers, in accordance with Article 46 of their charter, are obliged to present for loading only cars in good working order that are suitable for the shipment of the given freight and cleaned of traces of the prior freight, where necessary washed and decontaminated. This rule has long not been observed in practice. Most often the freight shippers, in order to clear their consciences, plug up the holes in the cars with something or other—and as they say, fly away, vessel, bear off to distant shores... The water cannon, of course, easily wash off these weak patches in unloading.

They prefer not to play blind man's bluff at PGMK, and they have organized and maintain a railcar preparation station at their own expense. Over 8,000 units of rolling stock were handled over the first half of the year alone. And imagine, the time spent repairing them is carefully recorded as excess idle time by a slow client with the imposition of fines.

That is, you will agree, a bit much.

The capabilities of the repair workers of the combine are unfortunately also limited. And they cannot "treat" all forms of damage anyway, some of them require special equipment and spare parts that they have only at railroad depots. What is the sense, it would seem, of chasing all the way to Mangyshlak for railcars? Some 4,104 units of rolling stock were sent here in the first half of the year alone that had to be sent right back. Who needs this leapfrog? And the main thing, can you do business under such conditions?

Railroad Lottery Resumes in 1990

18290292a Moscow GUDOK in Russian 19 Sep 89 p 1

[Interview with V. Pryadko, chief, Main Administration for Centralized Bookkeeping and Finances, Ministry of Railways, by unnamed GUDOK correspondent: "One out of Every Eight Tickets Will Be a Winner"]

[Text] **The All-Union Railroad Lottery will be conducted next year for the first time after a hiatus of many years. At the request of GUDOK's editors, this report is commented on below by V. Pryadko, chief, Main Administration for Centralized Bookkeeping and Finances, Ministry of Railways.**

[Correspondent] Viktor Fedorovich, what is the purpose of conducting this lottery, which is unusual for us?

[V. Pryadko] There is only one purpose—to attract money from the population in order to improve and expand pasenger service on our steel mainlines. It's no secret that our passenger service is lame, as they say, in both legs. This is particularly noticeable during the peak summer hauls. It's a familiar scene: there are one or two ticket offices in operation at the station, and they have enormous waiting lines. And the mass of other ticket offices, which, by the way, have been outfitted with up-to-date, extremely expensive electronic equipment for filling out tickets, are closed. Of course, there are shortcomings of the railroad people here too. But one of the reasons for this is the lack of funds: there is not enough money to pay more ticket agents.

For this very same reason we cannot always replace even the table linen which has gotten into a "state of disrepair" earlier than the normative service period. And so passengers are provided with sets of linen which have been washed and rewashed until they are worn and even torn. In short, we are in need of funds. And we decided to earn them with the aid of a lottery.

[Correspondent] What is the total amount that the sector is counting on obtaining?

[V. Pryadko] Let's figure it out. Ten million tickets will be issued at a cost of one ruble each. Half of the money will go to pay off the winners. The remainder, after deducting expenses for organizing the lottery, will be distributed as follows: 85 percent to the state budget and the remainder to the railroads. Thus, the total amount of

gains by the railroads depends on themselves: the more thay sell, the more they earn. Not a kopeck will be taken away from them.

[Correspondent] And what will the passengers win?

[V. Pryadko] As winnings they will be provided not with things, but rather with railroad trips. For example, a complete ticket for four persons in a compartment car, round trip, for the maximum distance. Its cost is 744 rubles. There will also be tickets for two and for one. Such winnings will be 10 in each of 50 categories. Moreover, a winning ticket will be valid for an entire year.

[Correspondent] But what if the person does not want to travel?

[V. Pryadko] Then he can obtain the full value of his winning ticket in money.

Among the winners there will also be a privileged, year-long, suburban ticket worth 82 rubles. There are also six-month and one-month tickets in this category. There will be 23,800 such winners in each category. And in toto each category will have more than 25,000 winners. Thus, one out of every eight tickets will be a winner.

[Correspondent] It seems to be quite well thought out. But suppose a person wins and then comes to "cash in" his ticket. And...here is the familiar, very long line, the rudeness and boorishness at the station. Once this ticket number is taken, what then?

[V. Pryadko] It is precisely this that we fear most of all. But we are taking appropriate measures. What kinds of measures? The lucky holder of a winning ticket will not have to "wait in line forever" for his prize railroad ticket. It will be sufficient for him to direct himself to the station administration, and he will have his railroad ticket brought to him, as they say, on a little plate with a blue edging. Furthermore, he will be congratulated and thanked. After all, he had supported our sector with his contribution, and he will be given the best seat on the best train.

[Correspondent] And so, it seems to us that the passengers should be satisfied. But just who is going to undertake the bothersome business of distributing the lottery tickets?

[V. Pryadko] We are placing great hopes on the ticket agents and the conductors. And the additional bother will also be paid additionally: for the ticket agents—two percent of the cost of the lottery tickets sold, and for the conductors—five percent. The latter is, so to speak, a bonus for the risk involved: after all, the conductors will not be just sitting there; they will have the additional difficulties of moving around. If they cope with this task successfully, they will receive quite a good legitimate additional amount to their wages. If the experiment goes successfully, we will begin to conduct such lotteries constantly, let's say, five times a year. Everyone will be winners from this: the state and our enterprises, the distributors of tickets, and, mainly—the passengers. Because, you know, the funds earned from the lottery will go toward turning our justifiably cursed, "uncertain" service to face people.

U.S., USSR Railroads Compared

18290292b Moscow GUDOK in Russian 19 Sep 89 p 2

[Article: "Railroads in the USSR and the United States"]

[Text] **Many of GUDOK's readers have requested us to furnish comparative features of railroads in the USSR and the United States. Today, by way of fulfilling these numerous wishes, we are publishing some materials prepared by the TsNIITE [Central Scientific Research Institute for Technical-Economic Studies]] of the Ministry of Railways.**

The extent of Soviet railroads amounts to 12 percent of the world's railroad network, and this mode of transport performs 53 percent of the freight turnover and almost one-fourth of the passenger turnover of all the world's railroads.

If we compare the development of the network and the operating indicators of railroads in the USSR and the United States, we can see that each kilometer of track of Soviet railroads handles transported products, as measured by ton-kilometers, in amounts greater than the U.S. railroads by a factor of five.

Indicator	USSR, 1 Jan 89	U.S., 1 Jan 88	Ratio, USSR:U.S.
1. Territory, mln. sq. km	22.4	9.4	2.4:1
2. Population, mln. persons	286.7	244.4	1.2:1
3. Length of rail network in use, thou. km	146.7	291.6	1:2
4. Length of electrified lines, thou. km	52.9	3.1	17:1
5. Freight dispatched, mln. tons	4097.4	1276.5	3.2:1
6. Freight turnover, bln. ton km	3924.8	1483.2	2.6:1
7. Passengers, mln. persons	4395.9	312.0	14:1
8. Passenger traffic, bln. passenger km	413.8	19.8	21:1

Indicator	USSR, 1 Jan 89	U.S., 1 Jan 88	Ratio, USSR:U.S.
9. Intensity of hauling freight, mln. ton km per km	26.8	4.8	5.6:1
10. Freightcar turnover, days	6.6	25.0	1:3.8
11. Section speed, km per hr	32.3	30.7	1:1
12. Average daily locomotive run, km	421.7	227	1.8:1
13. Average daily freightcar run	247.9	80.4	3.1:1

Comparing a number of quantitative indicators attests to the higher level of utilizing technical means, including locomotives and cars, in the USSR.

The most important indicator characterizing the efficiency of hauling operations is labor productivity. During the years of the 12th Five-Year Plan, when freight turnover increased by 5.2 percent, labor productivity in the USSR's railroad transport grew by 19.5 percent, which created the necessary conditions for solving many of this sector's social problems.

Without state subsidies, by means of their own financial resources, the average monthly wage of employees connected with hauls increased and had reached 290 rubles as of 1 June of the current year. Allocations for building apartment houses, for education, and medical support have also increased.

According to an estimate by the TsNIITEI, as of 1 January of the current year, the labor productivity of Soviet railroads amounted to 84 percent of the analogous indicator for U.S. railroads (within a 1:2 ratio of labor intensity between freight and passenger hauls).

During the years 1986-1988 on the railroads of the United States freight turnover increased by 17.1 percent, while in the USSR during the same period it grew by 2.4 percent.

U.S. railroads comprise mainlines which are outfitted with a high level of equipment and technology. They are engaged in hauling bulk freight along with insignificant volumes of passenger hauls, the latter being more highly labor-intensive. In turn, Soviet railroads perform 65 percent freight turnover and 45 percent passenger traffic in inter-city and suburban transportation.

Further introduction of intensive technologies and an increase in labor productivity on the USSR's railroads depends upon accelerating scientific and technical progress and mechanizing labor-intensive, manual operations. Unfortunately, the electric locomotives, diesel locomotives, cars, track machinery, computer equipment, radio communications systems being supplied by our Soviet industry, as well as the means of automation being turned out by plants under the administration of the Ministry of Railways, are inferior to foreign models with regard to reliability, economical qualities, provision with up-to-date diagnostic units, ergonomics, and ecological purity. Not to mention the fact that the needs for railroad equipment, taking into account the exceptionally high operational intensity of Soviet railroads, have not been satisfied over the course of a lengthy period.

All this is leading to a rapid wear and tear on the equipment, its low level of reliability, the impossibility of setting aside the necessary technological time for repairing the track and the electric-power supply system, as well as the inefficient utilization of the existing machinery and mechanisms.

Soviet railroads lag greatly behind the foreign railroads regarding the introduction of microprocessor equipment in locomotive control systems, new materials and structural components of cars, computerization of automatic systems for controlling train traffic, mechanization and robotization of repair production and loading-and-unloading operations, the level of service on trains and in stations, as well as solving social and everyday problems.

As a mass, economical, reliable, and ecologically pure type of transportation, as an instrument of intra-Union and international reciprocal interaction, railroads will also remain in the future the foundation of the USSR's transportation system.

August Rail Traffic Safety Reviewed

18290292c Moscow GUDOK in Russian 19 Sep 89 p 2

[Article: "Traffic Safety: A Review for August"]

[Text] The situation regarding rail traffic safety became worse in August. In comparison with the preceding month and with August of last year, the number of wrecks increased (five as contrasted with four). A passenger train wreck occurred on the West Kazakhstan Railroad because of a widening of the track. Six out of eight accidents which were allowed to occur happened with passenger trains on the October, Moscow, Azerbaijan, Transcaucasian, East Siberian, and Far Eastern Railroads. Despite all the serious accidents, there were no fatalities.

The freight train wrecks occurred for various reasons. On the West Siberian Railroad—due to a breakdown of a rail web. On the Baltic Railroad a break in the rails due to a bolt opening in a joint led to the derailment of a diesel locomotive and 18 cars. On the Obluchye-Arkhara Section of the Far Eastern Railroad a trailer-tractor, while driving through a railroad crossing, tilted a rail,

which led to the derailment of 24 cars, a fire and a lengthy interruption in traffic along both tracks (the tractor had been driven by a drunken worker at the Obluchye spetsmekhlessemkhoz [specialized, mechanized forestry and seed farm]. At the guard crosing of the Strizh Station on the Kirovskiy Division of the Gorkiy Railroad a ZIL-130 vehicle of the military unit, after driving around a closed barrier, crashed into the second car of a freight train. As a result of this serious accident, 29 cars were derailed (28 were so badly smashed that they have been taken out of stock), 300 meters of track were damaged as well as a switch and a relay network. Train traffic on the Kotelnich-Lyangasovo was interrupted for more than a day. The driver, who had grossly violated the rules of road traffic, perished.

The month's worst two wrecks occurred due to the fault of the drivers of automotive transport equipment. Analogous causes led to accidents to passenger trains on the Far Eastern and Azerbaijan railroads. It is obvious that there are still insufficiencies in that preventive work which is being conducted with automotive transport drivers and those at agricultural construction enterprises. We must intensify this work and conduct it in close contact with the public, and together with the GAI [State Motor-Vehicle Inspectorate], widely elucidate the problem of the mass news media.

As previously the case, the gravest situation with regard to traffic safety remains in track work. Employees in this sector were responsible for three wrecks and three accidents which occurred in August. One accident was the fault of hauling enterprises on the Eastern Siberian Railroad, a locomotive enterprise on the Transcaucasian Railroad, and a car enterprise on the Northern Railroad.

On the railroad network the total numbers of cases of defects in train and switch operations declined somewhat (down by 2.1 percent) in comparison with August of last year. Nevertheless, in some enterprises—locomotive, STsB [common battery office], and communications—their number increased by 0.7 percent and 26 percent respectively.

There was a significant worsening in the status of traffic safety in the system of maintenance for containerized hauls and commercial operations, where instances of defects increased by half. Cases of freight becoming loose and falling out doubled (12 in contrast to 7). The Gorkiy, Lvov, Tselina [Virgin Land], and Western Siberian Railroads each allowed two such gross safety violations. Cases continue of the arbitrarily willful departure of trains along an unfinished main route (five in contrast to one). Moreover, on the Kemerovo and Central Asian main routes defects were allowed to occur with passenger trains.

The situation is extremely unsatisfactory with regard to traffic safety in maintaining the hauls on the Kenerovo and especially on the Tayginskiy Division. During last month alone cars "jumped the track" twice. There has been a continued growth of crashes and derailments of rolling stock during switching operations.

In rail-car maintenance the numerous uncouplings of cars from freight trains (420 cases), the increase in breakages of the axle journals of wheel pairs (seven in contrast to three in August of 1988) speaks for itself. On the Sverdlovsk, Krasnoyarsk, and Far Eastern railroads the rail-car maintenance workers allowed trains to be dispatched with enclosed end-type cranes.

During the month in question seven short thoroughfares saw the use of prohibited signals by locomotive crews. Of these, three thoroughfares are on the Sverdlovsk Railroad and two on the Odessa Railroad. Serious difficulties in the operation of main lines were caused by 624 defects in locomotives on trips.

August again witnessed instances of discharging and dangerous freight being dispatched in unrepaired rolling stock, with incorrectly filled-out documents and with violations in the norms of covering. The greatest number of such violations were on the Central Asian and Alma-Ata railroads.

The repetitive nature of the causes of defects, accidents, and wrecks, as well as the entire chains of violations leading to them, attest to the low level of skills among certain transport employees and a lack of understanding on the part of some of the lofty responsibility borne by every railroader for ensuring traffic safety. Confirmation of this is provided by the details of two accidents which occurred in August on the Transcaucasian and Eastern Siberian railroads.

An accident with an electric train (it collided with the rear of a freight train) occurred on 25 August on the Tbilisi-Telavi Section. As a result, seven passengers were injured. During the service investigation an entire "bouquet" was discovered on the part of the locomotive crew of the Tbilisi Passenger Depot. Electric locomotive engineer Gogenashvili and assistant engineer Dvornikov, when they received the electric train on the Tbilisi station tracks, did not inspect the undercarriage of the leading electric section. As it became clear after the train had already left, the speedometer drive was already out of kilter and needed adjustment. After covering one leg of the trip and having stopped on schedule at the Tbilisi Classification Yard, the crew was not interested even here as to why the speedometer was not working. If they had looked at its reducing gear, then, having seen the loosened bolts, they would have tightened them and continued on with a guarantee of safety.

But the crew continued to drive the train without monitoring the speed of movement from the forward cab. Assistant Engineer Dvornikov was riding for the first time with Engineer Gogenashvili. Nevertheless, the engineer, despite the non-operating speedometer, yielded his seat to his assistant, without monitoring his actions nor informing him about the irregularity that he had learned about from the dispatcher.

Proceeding on up ahead was the freight train, following the Vaziani-Iori run; having used up all its sand on the 12,000-meter climb, it came to a stop. There was a distance of 1,100 meters from its rear section to the covering light signal. It was not by random chance that the sand had run out. In general, there is not enough of it on the railroad, and it is given out practically by coupons, as if it were sugar. In order to economize on sand here, a decision was even adopted to close all sandboxes on locomotives except for those located in front of the leading wheel pairs.

Assistant Engineer Dvornikov, after stopping the electric locomotive at the stop signal, stayed there for scarcely more than a minute, and, without having received any information about the run being free, went through the red light, and gathered a speed of 37 km per hour (this was deciphered from the speedometer in the rear cab of the electric train). Where the engineer was at this time, what kind of conversation took place with his assistant, and whether it took place at all is unknown. He asserts that he announced the need to stop the train over the inter-com, but the electric train's crew apparently did not hear him.

Nor did he manage to establish communication with the dispatcher. And under such circumstances Dvornikov continued to drive the train. A curve, an excavation, and suddenly up ahead—the rear of the freight train. In this situation the assistant became so distraught that he did not even manage to use the engineer's stopcock. He shouted, raised his hand..., and, fortunately activated the automatic stop (he released the emergency lever from its pressure). Prior to the collision, the speed was reduced only to 22 km per hour. This is not the first such case on this run.

The causes of the accident to the passenger train at the Perevoz Station, Tayshetskiy Division, Eastern Siberian Railroad are somewhat different. While carrying out planned, preventive work on the electric drives of switches, due to very gross violations of the PTE [railway operating rules] by the employees of this station, passnger train No 78 Moscow-Neryungri was accepted for an unfinished main route. The electric locomotive and three cars were derailed. Fortunately, the passengers suffered no injuries.

Station Chief Potekhin, in preparing the main route to receive the passenger train on Track 4, operating the switch by a manual switch throw lever, did not fix it with a packing, nor did he lock it closed. This is a gross violation of the requirement stated in the Instruction on Train Traffic and Switch Operations on Railroads. He reported to Sayelkina, the person on duty at the station, that the main route had been made ready. She, in turn, continued the chain of violations by immediately opening up the passenger signals to allow the train to pass through. The technical conclusion of the commission which investigated this accident is as follows:

"...As a result, at the moment when the train passed through, at the moment of the downward pressure by the electric locomotive's first truck on the trunk of the rail ramp, its detachment occurred, with the second truck moving in a different direction, and this led to the derailment of the electric locomotive and three cars."

It may be said that the accident at this station was "pre-planned," since Station Chief Potekhin had not undertaken to conduct the scheduled inspection of the tracks, switches, and signals. From the railroad office and from his references it is obvious that Potekhin was not fit to be a supervisor. And this was known to the leading officials of the Tayshetskiy Division. It took an accident to a passenger train to solve the problem of dismissing him from such a responsible post.

MARITIME AND RIVER FLEETS

Shipbuilding Statistics for 1983-1989

18290294 Leningrad SUDOSTROYENIYE in Russian No 8 Aug 89 [signed to press 11 Jul 89] pp 54-57

[Report by N.I. Alekseyev: "A Chronicle of Domestic Shipbuilding and Navigation: Shipbuilding and the Fleet in the Period 1983-1989"]

[Text] **The preceding part, "A Chronicle of Domestic Shipbuilding and Navigation" [Shipbuilding in the 10th and 11th Five-Year Plans], was published in our journal six years ago (SUDOSTROYENIYE No 8, 1983). It encompassed the period 1976-1978. Subsequently, in supplements and refinements of the earlier published parts of the Chronicle (SUDOSTROYENIYE No 10, 1984, No 9, 1986, and No 8, 1988), separate information was developed, part of which also dated to 1983-1985. This caused a certain separateness and incompleteness of the data devoted to this period. Therefore, the present publication begins with the refined, systematized data for 1983-1985, which replaces that published earlier.**

Chronological Tables[1]

1983

The prototype lighter-container carrier Aleksey Kosygin was built (Tavriya design) with a deadweight of 40,880 tons (262.8 X 32.2 X 18.3 m; displacement 62,040 tons, gross capacity 36,640 reg. tons, power 24,700 kw, speed 18.5 knots). The ship is calculated for transport of 82 lighters or 1473 containers. A second lighter carrier—the Indira Gandhi—was built in 1985 and a third—the Le Zuan—in 1987.

The nuclear-powered icebreaker Rossiya (third Arktika type) with a power of 55,150 kw was built.

A prototype modernized tanker Dmitriy Medvedev was built, with a deadweight of 28,750 tons (development of ships of the Komandarm Fedko type) (179 X 25.3 X 15 m; power 7800 kw, speed 14.8 knots). The ship is intended for simultaneous transport of up to four grades

of petroleum products and crude oil. A series of ships for Soviet and foreign purchasers is being built.

A prototype shallow-draft container-packet carrier, the Vitaliy Dyakonov, is being built for northern seas, with a deadweight of 3500/5000 tons (124.4 X 16.4 X 7.5 m; cargo capacity 3000/4600 tons, power 2200 kw, speed 12.4 knots).

Two series of prototype specialized vegetable carrier ships were built: cargo capacity 600/1300 tons (86.7 X 12.3 X 3.5 m; displacement 2440 tons, power 1030 kw, speed 19.5 km/hr) and cargo capacity 800/1400 tons (84 X 12.3 X 3.5 m; displacement 2195 tons, power 880 kw, speed 19.5 km/hr). The ships are designed to transport vegetables and cucurbit crops and can be used to transport packed-piece and packaged cargoes, grain and containers. In accordance with the "USSR Food Program for the period up to 1990", 90 river vegetable-carrier ships should be built.

A prototype of the maritime self-powered, full-rotation floating crane, Slava Sevastopol, was built, with a cargo-hoisting capacity of 500 tons (65.2 X 28 X 5.4 m; displacement 3025/4315 tons, power 2000 kw, speed 7 knots).

A prototype maritime self-powered full-rotation floating crane Sevastopolets was built, with a cargo-hoisting capacity of 140 tons (46.8 X 21 X 4 m; displacement 1495/2018 tons, power 1000 kw, speed 7 knots).

The prototype motor vehicle-passenger ferry Vokhilayd was turned over for operation (120 passengers, 10/40 motor vehicles, speed 12 knots) for the line Khiuma Island—mainland. The Kharilayd (1984), the Akhelayd (1986) and the Kryglayd (1987) were built subsequently. In 1988 the Yeysk was built for the Azov Shipping Company.

The prototype ship Morskoy Geolog was built to perform geophysical and geological work, with a displacement of 5800 tons (104 X 16 X 10.2 m; power 5150 kw, speed 16 knots), and participated in the international exhibition Ocean-Expo-83 in Bordeaux. In 1984 the ships Geolog Petr Antropov and Akademik Aleksandr Karpinskiy will be built, and in 1985—Akademik Aleksandr Sidorenko and Geolog Fersman.

The scientific-research ship Geofizik put out to sea.

The prototype fish-transport ship Kirovets to transport refrigerated fish products from catching vessels to fish processing plants was built (31.9 X 6.9 X 3.2 m; gross capacity 131 reg. tons, power 220 kw, speed 10.2 knots), and will be put into operation in 1984.

The prototype port berthing tug Anton Mazin was turned over for operation, power 1180 kw (29.3 X 8.3 X 4.3 m; displacement 360 tons, speed 11 knots).

The prototype passenger hydrokeel Luch-1 (development of Zarnitsa type ships) was put into operation, with a passenger capacity of 51/66 persons (22.8 X 3.8 m; speed 44 km/hr).

The prototype passenger motorship with ice strengthening Moskovskiy-1, calculated for the transport of 150 passengers on intracity and suburban lines and man-made reservoirs, was built.

The prototype bilge-water collector Flora (54.9 X 9.3 X 5.1 m; displacement 1258 tons, power 590 kw, speed 11.2 knots) was built.

A prototype catamaran was built to collect Crambe on artificial underwater fields.

The country's maritime fleet, according to the data of the USSR Register on 1 January/1 July 1983 will consist of 7477/7480 ships with a total gross tonnage of 23048756/23320204 reg. tons and deadweight of 26372575/26723337 tons, and of them: passenger and cargo-passenger—261/267 units with a total gross tonnage of 648238/654979 reg. tons and deadweight of 186404/187634 tons (including ferries—46/47, 198605/208490 reg. tons and 59694/61341 tons); dry-cargo—2313/2291, 10494628/10523833 reg. tons and 13624163/13660508 tons (including: lumber carriers—372/368, 1460846/1432446 reg. tons and 2046228/1999385 tons; container carriers—45/47, 383554/410882 reg. tons and 386500/432755 tons; ships with horizontal cargo processing—51/53, 34649/368816 reg. tons and 462022/494636 tons); tankers—442/432, 4850024/4702291 reg. tons and 7371277/7127380 tons (including: oil tankers—394/382, 4593033/4441544 reg. tons and 7087345/6838657 tons; gas carriers—11/12, 186525/187239 reg. tons and 201398/201789 tons; chemical carriers—3/3, 9345/9345 reg. tons and 9960/9960 tons); combined—35/36, 692618/695317 reg. tons and 1157802/1160173 tons; fishing boats—2583/2577, 3364426/3383072 reg. tons and 1879877/1894764 tons; special purpose—424/426, 1951933/1946631 reg. tons and 1431937/1430830 tons; service—409/416, 394008/405720 reg. tons and 271964/284186 tons; service-auxiliary—1010/1010, 652881/660499 reg. tons and 449651/446318 tons (including: tugs—597/590, 217144/217794 reg. tons and 89034/88792 tons; icebreakers—34/36, 219962/230646 reg. tons and 99377/103195 tons). In addition, according to the data on 1 July 1983, 25 ships with a gross tonnage of 347862 reg. tons and deadweight of 571544 tons have the class of foreign classification societies (IKO).

An experiment was made on piloting, under winter conditions, ships of the Far East Shipping Company—the icebreaker Admiral Makarov and the diesel-electric ship Vasiliy Fedoseyev, with a cargo of timber and machinery.

The USSR Navy has 180 nuclear-powered submarines and 112 ships of the basic classes, with a total tonnage of 2.6 million tons.

1984

The prototype of a fish-factory hydrofoil trawler Antarktida was built, with a deadweight of 2590 tons (114.5 X 17.3 X 8.3 m; displacement 8110 tons, power 5140 kw, speed 15.6 knots).

A prototype composite double-tower repair dock with a hoisting capacity of 5000 tons (128 X 30.9 X 13.2 m) was built.

A prototype ship of the scientific-research series Vilnyus was built for commercial exploration (on the basis of a salt-wet-fish trawler of the Barentsevo More type).

The ship Poligon was built for underwater drilling of geological engineering wells, studying samples of minerals raised and testing maritime geological prospecting and commercial equipment.

The catamaran Geolog Primorya was built, with a displacement of 791 tons (35.1 X 18.2 X 4.5 m; power 440 kw, speed 9 knots) to seek and prospect solid minerals on a shallow shelf.

A prototype hydrofoil, the Polesye, was built, for 50 passengers, for sailing in shallow water and along winding rivers (21.3 X 3.6 m; displacement 20 tons, power 550 kw, speed 65 km/hr).

Seal-hunting ships with a displacement of 472 tons (39.1 X 8.1 X 3.6 m; speed 10.4 knots) are being built.

The country's maritime fleet, according to the data of the USSR Register, on 1 January/1 July 1984 will consist of 7554/7559 ships with a total gross tonnage of 23803843/24029924 reg. tons and a deadweight of 27393423/27563588 tons, and of them: passenger and passenger-freight—273/273 units with a total gross tonnage of 660759/673188 reg. tons and deadweight 188339/190167 tons (including ferries 47/48, 208490/221101 reg. tons and 61341/63187 tons); dry-cargo—2304/2296, 10805527/11049646 reg. tons and 14026450/14283262 tons (including: lumber carriers—371/371, 1457335/1457335 reg. tons and 2021196/2034835 tons; container carriers—47/52, 417857/447286 reg. tons and 429832/485208 tons; ships with horizontal cargo-processing—54/55, 378295/387774 reg. tons and 500136/550636 tons); tankers—433/420, 4665504/4513916 reg. tons and 7059918/6816165 tons (including: oil tankers—382/370, 4407665/4248443 reg. tons and 6775581/6521223 tons; gas carriers—12/12, 187239/187239 reg. tons and 201789/201789 tons; chemical carriers—3/3, 9345/9345 reg. tons and 9960/9960 tons); combined—39/41, 763575/768937 reg. tons and 1274395/1280137 tons; fishing vessels 2598/2598, 3425709/3435680 reg. tons and 1911911/1916889 tons; special purpose—427/430, 1941934/1936642 reg. tons and 1433019/1429557 tons; service—421/419, 422651/423529 reg. tons and 295998/295890 tons; service-auxiliary—1029/1048, 695870/721418 reg. tons and 487862/508177 tons (including: tugs—592/591, 217627/214856 reg. tons and 88504/92814 tons; icebreakers—37/37, 235988/235988 reg. tons and 105104/105104 tons). In addition, 30/34 ships with a gross tonnage of 432324/506968 reg. tons and deadweight 715441/843344 tons have class IKO.

1985

The prototype fish-transport refrigerator-supply ship Bukhta Russkaya was built, with deadweight 4900 tons (126.6 X 18 X 10.7 m; power 3960 kw, speed 15.3 knots).

The prototype shrimp refrigerator-freezer trawler Laukuva was built (35.7 X 8.8 X 6.1 m; displacement 560 tons, gross tonnage 359 reg. tons, power 590 kw, speed 10.7 knots).

The scientific-research ship Izyskatel-1 was built, with a displacement of 742 tons, for geological engineering surveying, developed on the basis of the seiner-trawler Nadezhnyy (45.6 X 9.3 X 5.1 m; power 590 kw, speed 11.9 knots) and the Gidrobiolog with a displacement of 168 tons, to perform work in the field of hydrobiology and for navigation practice for MGU [Moscow State University] students (26.7 X 6.1 X 2.7 m; power 150 kw, speed 9 knots).

The prototype pusher tug Volgar-40 was built, with a power of 440 kw, equipped with a rotating-thrust device. The ship is designed for work with consists with a cargo-capacity of up to 8000 tons (29.4 X 9.6 X 3.7 m; displacement 420 tons).

A prototype raft-pusher-tug BTP-601 was built, with 440 kw power (34.4 X 10.4 X 2.7 m; displacement 306 tons), designed to steer by pushing consists made up of non-self-powered dry-cargo and tanker barges, as well as of towed consists and rafts.

A prototype passenger ship for coastal navigation of the new generation, the Yevpatoriya (Zvezda series) was put into operation for 294 passengers (37.6 X 6.9 X 2.9 m; displacement 134 tons, power 955 kw, speed 17 knots). Ships of this type have come to replace passenger motorships of the Aleksandr Grin type.

In 1981-1985, RSFSR river transport received 945 pusher tugs, cargo motorships and tankers, 247 passenger ships and 1020 barges.

Launches made of fiberglass-reinforced plastic of the Pchelka type, weighing 50 kg, are being built to service water sport competitions.

Over 540 large-cargo pushed consists are being operated in the country's river basins.

The country's maritime fleet, according to the data of the USSR Register on 1 January/1 July 1985 consists of 7658/7583 ships with a total gross tonnage of 24239259/23869171 reg. tons and deadweight 27132385/26919038 tons, and of them: passenger and passenger-cargo—280/280 units, with a total gross tonnage 696624/697509 reg. tons and deadweight 198125/195144 tons

(including ferries—50/52, 244001/253807 reg. tons and 71087/74325 tons); dry-cargo—2299/2265, 11211471/11263354 reg. tons and 14452691/14494345 tons (including: lumber carriers—370/369, 1452682/1448059 reg. tons and 2030549/2024051 tons; container carriers—52/49, 490488/506745 reg. tons and 496204/509382 tons; ships with horizontal cargo processing—57/58, 404147/413636 reg. tons and 516126/521626 tons); tankers—414/409, 4460940/4422543 reg. tons and 6736021/6717631 tons (including: oil tankers—364/359, 4200348/4180906 reg. tons and 6446134/6426354 tons; gas carriers—12/11, 187239/186625 reg. tons and 201789/201519 tons; chemical carriers—3/-, 9345/- reg. tons and 9960/- tons); combined—42/42, 771618/771618 reg. tons and 1283008/1283008 tons; fishing—2653/2626, 3507910/3497812 reg. tons and 1946363/1935853 tons; special purpose—453/443, 1943888/1953241 reg. tons and 1430579/1433083 tons; service—425/432, 429005/474017 reg. tons and 301184/313077 tons; service-auxiliary—1074/1086, 746736/769077 reg. tons and 534113/546897 tons (including: tugs—596/593, 220098/219634 reg. tons and 89573/89285 tons; icebreakers—37/37, 235988/235988 reg. tons and 105404/105404 tons); in addition, 36/37 ships with a gross tonnage of 471067/491521 reg. tons and deadweight 750301/819532 tons have class IKO.

The maritime fleet and river transport transported, respectively, 240 million tons and 633 million tons of cargo, as well as 50.3 million and 132 million passengers.

1986

A prototype of the Arctic Supply Ship Vitus Bering was built (Dikson design) deadweight 9720 tons, calculated to transport containers (162.8 X 22.4 X 12 m; displacement 20,000 tons, power 1100 kw, speed 15 knots). The ships Aleksey Chirikov and Vladimir Arsenyev will be turned over for operation and in 1988—the Vasiliy Golovnin.

A prototype dry-cargo motorship for mixed (river-sea) navigation of the Volga-4001 ice class (Zhiguli design) with a cargo capacity of 4000/5500 tons, to transport general and bulk cargoes (140 X 16.8 X 6.7 m was built; power 1950 kw, speed 21 km/hr). Series construction has begun.

The prototype ship for squid yield Golitsyno was built, with a displacement of 1120 tons (56.4 X 9.3 X 5 m; power 735 kw, speed 11.7 knots).

The prototype self-powered motor vehicle-passenger ferry Baltiya, with triple-tier superstructure was built (51.5 X 14 X 3.4 m; displacement 790 tons, power 545 kw, speed 18 km/hr). A second ferry—the Nyamunas—will be built in 1987.

A prototype icebreaker tug for the Arctic, the OTA-1101 was built, with a power of 1030 kw (49.6 X 10.2 X 3.5 m; displacement 585 tons).

Prototype tugs with a power of 1320 kw, with a deckhouse that can be lowered, and the RT-401 series R-162A with a power of 330 kw were built, for work on small rivers.

Pusher-tug-rafts were built for the European part of the country, the same type as the BTP-601, but differing in the type of automatic coupling and towing devices.

The prototype motorship-platform Oka-40 was put into operation with a cargo capacity of 1200 tons (80.6 X 15.2 X 2 m; power 440 kw, speed 14 km/hr).

A prototype surface-effect ship, the Bizon, was built, with a cargo capacity of 20 tons, for operation under Arctic conditions.

The prototype surface-effect amphibious launch Puma was built, with a cargo-capacity of 1.3 tons (12.2 X 5.2 m; displacement 4 tons, power 180 kw, speed 40/60 km/hr), designed to give medical assistance at the scene and carry sick people to medical institutions. The design provides for medical, passenger and passenger-freight variants.

An experimental model of an amphibious, super-light, quick-dismantling, two-seat surface-effect launch has been developed (mass 100 tons, cargo capacity 250 kg, speed 45-50 km/hr).

A river catamaran-motorship type R19 is being reequipped into an experimental double-hull motor vehicle carrier, the Ivan Belyaev.

Surface-effect block-pontoons weighing 300-1000 tons are being built with equipment for subsequent installation in the consist of units for comprehensive preparation of gas at the Yamburgskoye deposit.

Block-modules of the upper structure of drilling platforms for the shelf area are being built.

The country's maritime fleet, according to the data of the USSR Register on 1 January-1 July 1986, consists of 7726/7822 ships with a total gross tonnage of 25162752/24882003 reg. tons and a deadweight of 28802684/27994680 tons, of them passenger and passenger-cargo—294/298 units with a total gross tonnage of 713439/698840 reg. tons and deadweight 200006/195648 tons (including ferries—54/56, 266077/288977 reg. tons and 78561/86525 tons); dry-cargo—2277/2319, 11628527/11909148 reg. tons and 14975214/15306112 tons (including: lumber carriers—368/367, 1443421/1439573 reg. tons and 2017551/2012785 tons; container carriers—50/52, 524590/551983 reg. tons and 525272/550443 tons; ships with horizontal cargo processing—62/65, 443807/482401 reg. tons and 541145/569091 tons); tanker—417/448, 4532149/4566549 reg. tons and 6869900/6857277 tons (including: oil tankers—370/400, 4273581/4303064 reg. tons and 6581698/6561362 tons; gas carriers—11/11, 186625/186625 reg. tons and 201519/201519 tons; chemical carriers (on 1 July)—1, 5712 reg. tons and 8661 tons); combined—45/47, 779661/785023 reg. tons and 1291621/1297363 tons;

fishing—2648/2680, 3509541/3561983 reg. tons and 1933068/1953806 tons; special purpose—447/455, 1963707/1995306 reg. tons and 1435935/1448846 tons; service—435/446, 503252/517692 reg. tons and 322785/330840 tons; service-auxiliary—1113/1129, 811277/847462 reg. tons and 582794/604788 tons (including: tugs—597/616, 224780/229616 reg. tons and 99218/95742 tons; icebreakers—37/38, 235988/256652 reg. tons and 105404/108156 tons); in addition, 50/56 ships with a gross tonnage of 721199/821669 reg. tons and deadweight 1191361/1368424 tons have class IKO.

1987

The maritime passenger gas turbine hydrofoil Tsiklon (Zenit design) for 250 passengers was built (44.2 X 7.4 m; displacement 137 tons, power 5880 kw, speed 42 knots).

The hydrofoil river passenger motorship Lastochka for 70 passengers was turned over for experimental operation (29 X 4.4 m; power 1980 kw, speed 90 km/hr).

The floating repair composite double-tower single-pontoon automatic dock with a hoisting power of 5000 tons was built (128 X 22.3 X 13.2 m).

A prototype composite double-tower single-pontoon floating repair dock was constructed for PBU and catamarans, with a hoisting power of 15,000 tons (144.2 X 81.3 X 14.4 m).

A fish-catching-extracting ship SDS-001 of the Primorye type was built for a 200-mile fishing area of the Far East.

Small floating refrigerators with a cargo capacity of 80 tons are being built for operation on small rivers, and of the Kholod type, with a cargo capacity of 150 tons, to extract fish from the port at coastal processing enterprises.

The country's maritime fleet, according to the data of 1 January 1987, consists of 7947 vessels with a total gross tonnage of 25686156 reg. tons and a deadweight of 29149624 tons, and of them: tankers—481 units with a total tonnage of 4325419 registered tons and a deadweight of 6683100 tons; oil tankers/chemical carriers—1, 305 reg. tons and 286 tons; chemical carriers—1, 5712 reg. tons and 8661 tons; gas carriers—11, 186625 reg. tons and 201519 tons; other tankers—10, 23683 reg. tons and 29605 tons; oil tankers and ore-oil carriers—13, 751520 reg. tons and 1303432 tons, ore carriers and bulkers—277, 3128338 reg. tons and 4879845 tons; general cargo ships 1431, 6986782 reg. tons and 8973681 tons; passenger-cargo—78, 560217 reg. tons and 164539 tons; container carriers, barge carriers, docking blocks—59, 742455 reg. tons and 749534 tons; ships transporting means of transport—27, 215181 reg. tons and 245170 tons; fishing bases, fish-transport ships—612, 3023341 reg. tons and 2705523 tons; fishing—2964, 3611070 reg. tons and 1974265 tons; passenger—234, 201496 reg. tons and 62523 tons; support, service ships—170, 206823 reg. tons and 168057 tons; tugs—666, 247387 reg. tons and 102870 tons; dredges—65, 119530 reg. tons and 80975 tons; icebreakers—38, 256651 reg. tons and 108171 tons; scientific research—229, 394857 reg. tons and 185483 tons; others—850, 698764 reg. tons and 522385 tons.

The proportion of maritime transport in general cargo turnover is about 12 percent. Almost half of the foreign trade cargoes fall to maritime transport. Of the total amount of maritime transport, 68 percent falls to overseas routes and 32 percent to coastal transport.

The ships of the Ministry of the River fleet perform over 6500 runs yearly with foreign trade cargoes, and visit almost 400 foreign ports in 28 foreign states in Europe, North Africa and Asia.

The cruiser of the revolution, Aurora, is being returned to a permanent resting place after the completion of comprehensive repair-restoration work (1984-1987).

1988

The first nuclear-powered icebreaker-transport lighter-container carrier Sevmorput was built, with a deadweight of 26420 tons, for the transport of 74 lighters or 1324 containers (260.3 X 32.2 X 18.3 m; displacement 61000 tons, power 29,420 kw, speed 20 knots).

A maritime passenger hydrofoil motorship for 120 persons, the Albatros, was built, with a speed of 35 knots.

A prototype of the fishing-extracting-processing ship for the Caspian, the Volga, was built, of a modernized series, differing from the Moryana ships in that frozen products are to be issued from it.

The fish-processing vessel for the Baltic Sea, Petrogradskiy, was turned over to the purchaser (85 X 13 X 6.5 m; displacement 2738 tons, cargo capacity 456 tons, power 850 kw, speed 11.3 knots), created on the basis of the Moryana type ships. A series of ships is being built consisting of the Vyborgskiy, Smolninskiyy, Kronshtadtskiy and Vasileostrovskiy.

A two-deck pleasure motorship for coastal sailing, for 300 passengers, the Lara was built for export use. A second ship is being built.

The scientific-research ship Gidrooptik was built (56.1 X 10.5 X 6 m; displacement 1149 tons, power 970 kw, speed 12.5 knots) on the order of the Leningrad State Optical Institute imeni S.I. Vavilov. The ship was developed on the basis of the refrigerator-seiner-trawler of the Alpinist type.

A prototype passenger motorship with a shallow draft, for 36 passengers, the Kolos, was built. The possibility is envisaged of using it as a ferry or a dry-cargo ship.

A prototype tug, the Yenisey, designed to lead barges and ships along Siberian rivers, was built.

A sail-motor training schooner Yunyy Baltiyets is being built (49.4 X 8.4 X 3.8 m; displacement 500 tons, power

300 kw, speed 9 knots) for the Leningrad Pioneers' Palace. It will be turned over in 1989.

Testing of a 10-seat hydrofoil launch with a diesel motor and 175 kw power, the Raduga-3, has begun.

A prototype tug launch for small rivers, the Burlak, has been built, with a displacement of 75 tons (8.7 X 2.4 X 1.3 m; power 95 kw, speed 17 km/hr) to tow non-self-powered floating craft and rafts and for work in timber floating.

Testing has proceeded on an amphibious-water-snowmobile boat, the Tsiklon, calculated for 4 persons, with a propeller (power 48 kw, speed 30/70 km/hr).

Testing has been completed on a deepwater manned device, the Osmotr, designed to perform comprehensive scientific-research work and studies of the bottom and to take divers to a depth of up to 200 m.

The country's maritime fleet, according to the data of the USSR Register on 1 January 1988, consists of 7983 ships with a total gross tonnage of 25994289 reg. tons and a deadweight of 29264698 tons, and of them: tankers—447 units with a total gross tonnage of 4227054 reg. tons and deadweight of 6532383 tons; oil tankers/chemical carriers—3, 27383 reg. tons and 45516 tons; chemical carriers—2, 13175 reg. tons and 18651 tons; gas carriers 11, 186625 reg. tons and 201519 tons; other tankers—12, 26449 reg. tons and 31972 tons; oil tankers and oil-ore carriers—13, 751520 reg. tons and 1303432 tons; ore carriers and bulkers—198, 2796494 reg. tons and 4432714 tons; all-purpose cargo ships—1525, 7713161 reg. tons and 9724206 tons; passenger-cargo—58, 459694 reg. tons and 135621 tons; container, barge carriers, docks—62, 799746 reg. tons and 808006 tons; fishing bases, fish-transport ships—583, 2962386 reg. tons, 2651011 tons; fishing boats—2717, 3632379 reg. tons and 1972215 tons; passenger (including those without hammocks)—254, 296395 reg. tons and 88299 tons; support, service ships—162, 204848 reg. tons and 152630 tons; tugs—644, 234471 reg. tons and 92948 tons; dredgers—70, 142603 reg. tons and 102235 tons; icebreakers—39, 260985 reg. tons and 110064 tons; scientific-research—255, 440755 reg. tons and 202068 tons; other ships—928, 817626 reg. tons and 659208 tons.

With respect to the types of power units, the ships of the Soviet maritime fleet have the following distribution: with steam piston units—71 ships with a total gross tonnage of 135400 reg. tons and deadweight 117277 tons; with steam turbines—14, 688737 reg. tons and 1025202 tons; with gas turbines—6, 84924 reg. tons and 88180 tons; with nuclear power—4, 70372 reg. tons and 14145 tons; with diesels—7360, 23638318 reg. tons and 27150682 tons; with diesel-electric units—528, 1376538 reg. tons and 869212 tons.

With respect to age, the ships have the following distribution: 0-4 years—1363 ships with a total gross tonnage of 4375007 reg. tons; 5-9 years—1279, 5353611 reg. tons; 10-14 years—1625, 4769005 reg. tons; 15-19 years—1659, 4769005 reg. tons; 20-24 years—1227, 4582297 reg. tons; 25-29 years—485, 1126242 reg. tons; 30 years and over—345, 343826 reg. tons.

The scientific ship Vityaz is moored to the wall of the Kaliningrad Yantar Shipyard for repair. This famous scientific-research ship, after its 65th voyage, came to its last stop in Kaliningrad. It is proposed that after repair, the Vityaz will again occupy a place on the Pregola River in the center of the city, becoming an ocean museum.

The USSR Navy, on 1 July 1988 will consist of 1380 warships: 4 aircraft carriers, 376 submarines, 96 cruisers, destroyers, and guided missile frigates, 174 patrol (frigates) and small antisubmarine ships, 623 cutters and minesweepers and 107 landing ships and launches. In addition, it has 1142 warplanes and helicopters and 12,000 naval infantry personnel.

1989

Construction of the nuclear-powered icebreakers of the Arktika type, with a power of 55,150 kw is continuing: the Soviet Union and the Oktyabrskaya Revolyutsiya.

In conjunction with the Finnish firm, Wartsila Marine, shallow-draft nuclear-powered icebreakers with 35,500 kw power, the Taymyr and Vaygach (150.2 X 29.2 X 15.1 m) are being built to work at the mouths of Siberian rivers.

Modernized tankers of the Karl Marks type are being built, deadweight 68,000 tons, based on ships of the Pobeda type.

A prototype ship with horizontal cargo processing, the S. Kirov, is being built, deadweight 12000 tons (157.8 X 23.8 X 16.9 m; displacement 21260 tons, power 7950 kw, speed 17 knots), calculated for transport of 1047 motor vehicles of the Zhiguli type or 664 containers.

A prototype marine drilling ship is being built, with displacement 12180 tons to search for oil and gas with deep drilling of 300/6000 m, at a sea depth of 6000/300 m (159 X 25 X 12 m; speed 12 knots).

In conjunction with the Finnish firm Rauma-Repola, a self-hoisting floating drilling unit is being built.

A prototype crane ship, designed to install drilling rigs in the oil fields of the Caspian Sea, is being built.

Fish-processing bases of the Kamchatskiy Shelf type are being built, with a deadweight of 2890 tons (126.3 X 18.2 X 13.1 m; displacement 8900 tons, power 2575 kw, speed 12.8 knots).

The scientific-research ship, the Akademik Nikolay Pilyugin, is being built for the USSR Academy of Sciences.

Modernized transport refrigerator ships with an elongated hull are being built.

Modernized Arctic supply ships are being built on the basis of the ship Vitus Bering.

Floating cranes of the Volgar type are being built, with a cargo-hoisting capacity of 1400 tons (85.6 X 33.6 X 7 m; power 1320 kw) for use at yards building PPBU.

The research ship Povolzhye is being built.

A dry-cargo motorship for mixed sailing is being built, with a cargo capacity of 2800 tons, designed to transport a broad list of cargoes along Siberian rivers.

Dry-cargo, shallow-draft motorships for mixed sailing of the Never type are being built for the basins of Siberia and the Far East.

A hydrofoil river passenger motorship with skegs, the Barguzin is being built (32.4 X 6.4 m) for 130/150 persons, with a speed of 50 km/hr to transport tourists and recreation seekers along the Baykal.

Motorships of the Olenek type are being built to transport cargoes along Siberian rivers.

A prototype fishing vessel is being built for coastal sea fishing and fishing in inland reservoirs, with a cargo capacity of 8 tons and 65 kw power.

Specialized tankers are being built—automated port oil-servicing vessels, carrying 225 tons of oil on board.

A specialized ship is being built to collect petroleum products from water surfaces.

A prototype oil collector is being built.

Oil tanker barges with a cargo capacity of 3000 tons are being built for Siberian rivers.

An ocean yacht of the Fazis-83 design is being built, with a displacement of 20.5 tons (25.3 X 5.8 X 1.8 m) to take part in the fifth international round-the-world race.

The country's maritime fleet, according to the data of the USSR Register on 1 January 1989, consists of 8018 ships with a total gross tonnage of 26550782 reg. tons and deadweight of 29976760 tons, of them: oil tankers—418 units with a total gross tonnage of 4309666 reg. tons and deadweight of 6665634 tons; oil tanker/chemical carriers—5, 78011 reg. tons and 119968 tons; gas carriers—11, 186625 reg. tons and 201519 tons; other tankers—15, 31057 reg. tons and 34355 tons; oil bulkers and oil-ore carriers—17, 874411 reg. tons and 1521561 tons; ore carriers and bulkers—165, 2817319 reg. tons and 4515389 tons; general cargo ships—1567, 7875440 reg. tons and 9837780 tons; passenger-freight—47, 413868 reg. tons and 123739 tons; container, barge-carriers, docks—65, 817562 reg. tons and 828049 tons; fish industry bases and fish transport ships—585, 2939733 reg. tons and 2622823 tons; fishing—2702, 3660256 reg. tons and 1972042 tons; passenger (including non-hammock)—261, 325974 reg. tons and 94283 tons; support ships, service ships—158, 199790 reg. tons and 137012 tons; tugs—633, 235379 reg. tons and 93689 tons; dredgers—72, 148093 reg. tons and 105979 tons; icebreakers—36, 253995 reg. tons and 107304 tons; scientific-research—261, 475864 reg. tons and 217087 tons; other ships—1000, 907289 reg. tons and 778367 tons.

With respect to the types of power units of the ships of the Soviet Maritime Fleet, the distribution is as follows: with steam piston units—61 ships, with a total gross tonnage of 132089 reg. tons and a deadweight of 115026 tons; with steam turbines—11, 640067 reg. tons and 950320 tons; with gas turbine—5, 80300 reg. tons and 82148 tons; with nuclear power—4, 70372 reg. tons and 14145 tons; with diesel—7395, 24230179 reg. tons and 27930022 tons, with diesel-electric units—542, 1397775 reg. tons and 885099 tons.

With respect to age, the distribution is as follows: 0-4 years—1352 ships with a total gross tonnage of 4302812 reg. tons; 5-9 years—1349, 5315184 reg. tons; 10-14 years—1597, 5908598 reg. tons; 15-19 years—1595, 4703210 reg. tons; 20-24 years—1275, 4663635 reg. tons; 25-29 years—482, 1273521 reg. tons; 30 years and older—368, 383822 reg. tons.

Footnote

1. Continuation. For the beginning, see SUDOSTROYENIYE 1978, Nos 7 and 10; 1979, Nos 2, 5 and 10; 1980, Nos 5 and 9; 1981, Nos 2 and 7; 1982, Nos 3, 5 and 10; 1983, No 8; 1984, No 10; 1986, No 9; 1988, No 8.

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River Transport Management Issues Examined

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[Article by S. Pyanykh, director of the TsNIIEVT, doctor of technical sciences, professor, and M. Amusin, head scientific associate of the TsNIIEVT, candidate of historical sciences: "The Management System: How Should It Be?"]

[Text] **This important question is now bothering many river transportation workers. One might say that the problem of branch management is at the crossroads as, incidentally, are many other things in our transition period. On the one hand the river transport management system that has developed over the past which is based on shipping lines that were directed in all respects by the Ministry of the River Fleet on the whole has proved its viability and for a long time provided for stable management of the branch.**

On the other hand the nature of the changing economic ties between river transport and its clientele, the greater independence of the shipping lines and also the regional organs of authority, and the forthcoming formation of the socialist market—all this sets new tasks for the management system and requires that it use different methods.

In essence the preparations for this have been going on since 1986 when RSFSR [Russian Soviet Federated Socialist Republic] river transportation was the first among the various kinds of transportation in the country to change over to the new management methods. The shipping lines have been given considerable independence within the framework of the existing structure—the right to approve plans, to conclude agreements with clients, to enter the foreign market, and so forth. This process is in progress but 3 years of experience have shown that it cannot be completed without reorganization of the functions of the branch center. It has turned out that under the new conditions the shipping lines have gone ahead on this path while the Ministry of the River Fleet is still operating under the previous conditions.

The task of changing the functions of the central apparatus has become extremely crucial. It requires a solution for otherwise the role of the branch center will completely contradict the economic reform which is growing in dynamism.

At this point it is impossible to do without a simple reduction of the number of employees of the management apparatus. In any case the reduction of the central apparatus by 36 percent in 1986 and the reduction of the number of main administrations from 29 to 17 did not lead to any significant changes in the methods and style of management. And this is quite natural for it was the number of people that was reduced and it should have been the number of functions.

In terms of the role of the ministry there are various, sometimes contradictory, viewpoints. The sociological poll conducted recently by the TsNIIEVT [Central Scientific Research Institute of Economics and Operation of Water Transportation] in the line organizations showed that there is even the opinion that the ministry is not needed at all, but the majority of those questioned definitely spoke out in favor of transforming it into a new type of state organ which relies basically on economic methods of management and has qualitatively new functions. It is indicative that nobody suggested leaving things as they were.

Consequently, the first thing that must be clarified is which functions the Ministry of the River Fleet should have under the new conditions. This is a question of fundamental importance since from it follows the system for management of the branch, the ministry's practical tasks, and its structure and management methods.

What does historical experience suggest to us? Let us give just one example from the past. When in 1922, under the conditions of the NEP [New Economic Policy] under the leadership of V.I. Lenin the Soviet Union was organized, for management of the most important state functions they created only five unionwide people's commissariats, and among them was the People's Commissariat of Transportation Routes. According to V.I. Lenin's idea, these people's commissariats could function in no other way than on the scale of the entire country, that is, they had to be extraterritorial and required centralization. All the other management organs were created at the republic level.

An independent statewide organ for management of water transportation was created for the first time—the USSR Narkomvod [People's Commissariat of Water Transportation] was created on 30 January 1931. On the basis of the USSR Narkomvod on 9 April 1939 the USSR People's Commissariat of the River Fleet was formed. On 6 June 1956 the union organ was abolished and the RSFSR Ministry of the River Fleet was formed along with administrations of the river fleets in a number of republics.

At the same time a number of other union and republic transportation ministries were formed in the country. The unified transportation system was broken down into small units both on the scale of the country as well as in a number of republics. Yet the logic of the development of transportation under under modern conditions requires not only a high degree of specialization but also centralization of a number of important functions (distribution of investments, coordination of shipments, the creation of a unified container system, a general transportation ASU [automated control system], and so forth).

What follows from this? In our opinion it would be quite incorrect to raise the question of creating a unified transportation ministry for the country. With the current colossal scale of shipments and the diversity of technical equipment and technology, kinds of transportation, complexity of economic ties and strengthening of the independence of the republics, by creating such a transportation ministry we would obtain a second unionwide agroprom with its unmanageability.

It is another matter to have a state organ for coordination of the development and activity of all kinds of transportation. Such an organ in the form of a bureau of the USSR Council of Ministers is undoubtedly necessary. Taking into account the exceptional importance of transportation of the life of the country and the complexity of the tasks for arranging its efficient operation, it would be expedient to place the bureau under the jurisdiction of the first deputy chairman of the USSR Council of Ministers.

As concerns the RSFSR Ministry of the River Fleet, it has one peculiarity which we frequently underestimate—the immense scale of the operation.

In terms of the share of the volume of the country's shipments by river transportation (85 percent) and cargo turnover (93 percent), in terms of the area of territory served (5 krays, 42 oblasts, 12 autonomous republics, and 9 national okrugs), in terms of the numbers and composition of the fleet (2,800 tug boats, 3,220 self-propelled cargo ships, 6,270 nonself-propelled passenger ships), in terms of the distance covered by the network of

waterways (100,000 kilometers) which exceeds the network in the United States by a factor of 2.5, and in terms of the number of large transportation and production enterprises (21 shipping lines, 14 administrations of routes and canals, 128 ports, 112 industrial enterprises)—RSFSR river transportation occupies absolutely the leading position on the scale of the country. No other country in the world has on a regional level such a water management operation or such volumes of river shipments. And although the RSFSR Ministry of the River Fleet operates within a single republic, in terms of its functions it is closer to being a state management organ than an organic regional one.

But the role and position of RSFSR river transportation should be evaluated not only by the scale but also by the special significance of its transportation work for the state, for river shipments are of pioneering significance for accelerating the developing regions of Siberia and the Far East and shipments along small rivers make it possible to assimilate many remote regions of the country with difficult access. One should also keep in mind the significant contribution of river transportation to the development of foreign trade through the use of ships with combined river-sea navigation.

What does foreign experience show us? In practically all countries transportation is among the most important elements of the infrastructure of the national economy, there are ministries of transportation everywhere, and in countries with a federal structure (the United States, FRG, India, and others) there are also local organs for transportation management.

But then arises the question of how the unified transportation ministries in these countries are capable of managing all kinds of transportation and an immense operation. The explanation is that these ministries perform only the functions which are appropriate for the state level. As a rule, they include creating the concept of the development of transportation and its policy, the preparation of the legislative acts, the implementation of the investment policy, the development of directions, and the stimulation of scientific and technical progress.

There is not a single developed capitalist country in which the transportation ministry actually handles operational management of shipments. In countries with a federal structure this function is performed to a certain degree by regional transportation organs which indirectly influence the transportation work performed by private transportation enterprises.

The question of the functions of the Ministry of the River Fleet has been considered comprehensively in the TsNIIEVT. This is why the following main functions were formulated: the development of the concept and the determination of the prospects for the development of river transportation; guidance of scientific and technical progress of the material and production base and the development of the social sphere of river transportation; the implementation of a unified economic and investment policy and coordination in the area of branchwide operational problems.

What are the principles for the interaction between the ministry and the shipping lines and other state enterprises of the branch? It seems that in the transitional period we are now undergoing the ministry apparatus should be maintained at the expense of the republic budget, which will provide it with the necessary economic independence and freedom to implement and protect state interests.

This proposal should not be regarded as an attempt to retain the administrative-command style of leadership. This compromise variant is a temporary combination of economic methods and the necessary share of centralization of management which is still organically inherent in transportation because of its nature. In the future, when the conditions ripen, the ministry apparatus, changing over to complete economic accountability, will interact with the shipping lines and other line organizations on a strictly economic basis.

The practical tasks follow from the basic functions. The principal and main criteria for what can be included in the sphere of the ministry's activity are questions of the development and operation of river transportation which cannot be solved independently by the shipping lines or other enterprises or on which it is necessary to work at the central level.

For example, in order to perform the first function the ministry must engage in a determination of the needs of the national economy and the population for river transportation in the future, in the development of the concept and long-term predictions of the development of the branch, in the organization of training and improving the qualifications of command and engineering personnel, in the preparation of legislative acts for river transportation for state and government organs, and so forth.

The second function requires implementing a unified technical policy in the area of the development of the fleet, ports, industrial enterprises, waterways and other elements of the material and technical base, leadership of scientific institutions of the branch and the organization of scientific research, experimental design, and planning work, the distribution of orders for the delivery of ships and other technical equipment by industrial enterprises and also foreign firms, and the solution of other problems.

Within the framework of the third function it is necessary to provide for the development of progressive methods of economic reform and the implementation of an effective investment policy in the branch, to coordinate the activity of the shipping lines for providing for shipments that require intercoordinated actions of the USSR Ministry of Railways, the USSR Ministry of the Maritime Fleet, and the USSR Ministry of Civil Aviation, to coordinate the activity of associated shipping

lines, to provide for cooperation between river transportation and foreign countries, to develop rules regulating shipping on internal waterways and navigation safety, and to solve other problems.

The changeover of the Ministry of the River Fleet to the performance of new functions requires thoughtful preparation and the adoption of a number of additional measures which, on the one hand, reinforce the independence of state enterprises of the branch and, on the other, relieve branch staffs of tasks that do not correspond to its new functions. Obviously it will be necessary to further improve the structure of the central apparatus and arrange the procedure for forming centralized funds, including the fund for the development and introduction of new technical equipment and the reserve fund for rendering assistance to shipping lines, and then also to organize a branch bank.

But let us be realistic: relieving the central apparatus of the duty of operational management of the branch will obviously not lead to an immediate, 100-percent improvement of things. The ministry has ramified and stable ties for management of operational activity both outside and within the branch. Many large issues are concentrated in its hands. These functions that are being taken out of the hands of the ministry must be replaced and the central apparatus will need time to learn to manage in the new way. Therefore the changeover to the new management system should be regarded not as a one-time act but as a more or less prolonged process.

Improvement of the system of branch management, of course, is not limited to changing the style and functions of the work of the central apparatus but requires serious modernization of it, and at the middle level. It also seems that the basis for the economic structure should continue to be the shipping line as it was before—a unified shipping enterprise which is conditioned both historically and taking into account experience in foreign countries where the shipping firm or company is a similar structural unit. The shipping line as the basic production association ideally should include not only the fleet but also the subdivisions and services that are economically and technologically involved in the shipments. This idea cannot be fully realized in the transitional stage. Intermediate measures are necessary.

The shipping line and other line organizations are now operating in keeping with the law on the state enterprise (association), they have considerable independence, and they are increasingly assimilating economic accountability. But the structural schema, which became ossified many years ago, remains unchanged. Hardly anybody would now assert that the existing 21 shipping lines are the best variant of the structure, which fully corresponds to modern conditions. Does it make sense, for example, that there are five shipping lines operating in the Ob-Irtysh basin—three from the RSFSR and two from the Kazakh SSR [Soviet Socialist Republic], along with their administrations, services, and so forth?

But in order to improve the structure of branch management at the middle level, we need, above all, the appropriate economic changes. In other words, the structural changes should correspond to the new economic conditions. This pertains to changing a number of shipping lines and other enterprises over to the second model of economic accountability, introducing the leasing contract in all units of the economy and using the shareholding form of enterprises, cooperative principles of management, and so forth.

But even now one can speak of the most expedient structural changes which could be implemented in the near future. First of all it is necessary to consolidate individual shipping lines, ports, and other subdivisions.

Another subject for consideration is the fact that the majority of all the profit of the Pechora shipping line is produced by the port. The situation is approximately the same in the Belskiy shipping line where the management could take over the Ufa port, as well as the Vyatka, Sukhonsk, and Zapadnoye shipping lines.

In the space of a newspaper article we cannot give concrete recommendations about this. But life itself is already giving us examples. Thus in the Kuban the administration of the Kuban shipping line, the port, and the ship repair yard have been combined into a single enterprise. It would be expedient to include in a number of shipping lines individual river maintenance enterprises and in the ports—developed areas of the route on those main waterways where their borders and interests in joint production and economic activity coincide.

Attention is drawn to the following circumstance: In the VORP [Volga United River Steamship Line] at the present time for practically every area served there is one large river port which is fully in charge of the operational activity (Gorkiy, Kazan, Kostroma, Ulyanovsk, Volgograd, and others), although it should be noted that while operational activity is being unified successfully in the ports, industrial enterprises located in the same city and serving the same shipping line function separately (Astrakhan, Volgograd, Gorkiy, Krasnoyarsk, Omsk, Osetrovo).

At the same time there are many examples in which individual oblasts serve entire shipping lines—Pechora, Kuban, Vyatka, Belskiy. Is this expedient? And yet the SZRP [Northwestern River Steamship Line] operates in several oblasts. These questions of the correspondence of the boundaries of shipping lines to administrative boundaries are not idle if one keeps in mind the problems of regional economic accountability which have risen to their full height in our economy.

There can be various solutions here but, in our opinion, under the conditions of independence and self-financing of transportation enterprises the greatest survivability will be found in those which operate in consolidated administrative-economic regions and on an interbasin basis.

One of the most important forms of improvement of the management structure is the creation on a voluntary basis of various associations, concerns, and consortiums on the functional or regional principle.

In our opinion, first of all one could create associations of related shipping lines, first in the Central and Northwestern basins, for further development of interoblast shipping of cargo and export-import shipments and more efficient utilization of the handling capacities of the fleet, the handling capacities of the ports and waterways, and the capabilities of ship repair enterprises. This also makes it possible to provide for closer interaction with other kinds of transportation and create unified comprehensive programs for further proportional development of production capacities of transportation units in consolidated regions.

It is possible to create various associations of river transportation enterprises (ports, plants, and technical sections of the route) in an administrative region (oblast) for coordination of the work for satisfying the needs of the oblast economy for shipments. Such associations could also include enterprises of other departments which have river fleets (fishermen, foresters, geologists).

Significant possibilities are opening up for the creation of associations or groups of enterprises located in the same water transportation section on a unified technological basis. This will make it possible to provide for concentration of funds and resources and the application of the latest achievements of science, technical equipment, and technology. We know that work like this is being done in the Leningrad water transportation unit of the SZRP administration. According to approximate figures, such associations could be created in more than 40 transportation units on the RSFSR water routes. And the associations could be formed not only for production purposes but also for social needs, for example, for the construction of housing.

There are already examples of the creation of associations. Recently in Moscow the Sovrechflot association was formed for foreign economic cooperation with foreign countries, and more than 50 organizations, shipping lines, basin waterways administrations, plants, and scientific, training, and other enterprises volunteered to become parts of it.

Of course all structural changes, consolidations, unifications, and so forth are possible only on a voluntary basis and taking into account the economic independence of the structural units. In order to improve the management system it will apparently be necessary also to solve such problems as including workers' supply in the shipping line administrations, envisioning their commodity support through oblast trade administrations, giving the shipping lines the right to write off ships and other equipment, and many other tasks of a practical nature.

In conclusion we should like to emphasize that the judgments expressed here do not claim to be indisputable. The problem is too large and it must be solved thoughtfully and flexibly, considering branchwide interests and local conditions. Therefore it seems expedient to us to have public discussion of these important and complex issues on the pages of VODNYY TRANSPORT.

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